

# THE METAL INDUSTRY

WITH WHICH ARE INCORPORATED  
THE ALUMINUM WORLD, THE BRASS FOUNDER AND FINISHER AND ELECTRO-PLATERS REVIEW  
A TRADE JOURNAL RELATING TO THE NON-FERROUS METALS AND ALLOYS.

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NEW SERIES  
VOL. 8, No. 6.

## THE DETROIT CONVENTION OF FOUNDRYMEN AND MANUFACTURERS JUNE 6-11, 1910.

A DESCRIPTION OF THE SUCCESSFUL TERMINATION OF THE LONG PLANNED GATHERING.

Last year at the close of the Foundrymen's Convention in Cincinnati THE METAL INDUSTRY in its June issue remarked that that convention had set a mark in standard of excellence, as regards exhibits and attendance which it would be hard for any subsequent convention to equal or surpass. Early in 1910 rumors began to circulate regarding the preparations for the coming event to be held in Detroit. From all over the country came reports of enthusiasm and interest shown in foundry circles. These rumors and reports finally crystallized into reality and the convention just closed in Detroit more than justified the expectations of all concerned.

The great convention completely eclipsed anything of the kind ever attempted before in the United States, and in fact so far as we know in the world. A remarkable sight indeed to see so many members of a trade, hitherto so secretive, gathered in knots about some interesting exhibit eagerly exchanging ideas and experiences and storing up information for future use; or seated in the meeting hall listening attentively to the excellent papers that were presented and then rising and telling in simple words whether they agreed or disagreed with the views of the speaker. No wonder one man remarked that "he did not know there was so much to the foundry business and next year he should bring his foreman!"

The convention just carried to a successful close was the fifteenth annual meeting of the American Foundrymen's Association, and the fifth annual meeting of the American Brass Foundrymen's Association. The American Foundry Foremen also met with the foregoing, a large number being members of two of the three organizations. As usual the exhibit of the Foundry and Manufacturers Supply Association proved to be a most interesting attraction.

### THE CONVENTION AND ITS PROGRAM.

There had been considerable discussion when it was learned by the world at large, that the convention would be held at the Michigan State Fair Grounds situated seven miles out of the center of the city. Contrary to many expressed opinions this fact did not

detract from enthusiastic attendance. In fact, the visitor when once on the ground had no counter attraction to absorb or divide his attention and consequently devoted his entire energies to the convention.

Too much credit cannot be given to the men who had the arrangement and planning of the convention in charge. These, the members of the Detroit Foundrymen's Association, together with the secretaries of the visiting associations, that hustling trio Messrs.

Moldenke, Hoyt and Corse, made possible the really excellent program that was carried out. The meetings of the associations were held in the second floor of the Michigan Building, and a better and more suitable place could not be found. Here in sharp contrast to last year at Cincinnati, the whirr and rumble of the machinery of the exhibit could not be heard, and nothing detracted from the enjoyment of the technical papers read. Instead of joint sessions as last year, each association held its own, one following the other. While this was considerably more satisfactory than joint sessions, it would seem desirable that either the association holding the first session be more prompt in getting down to business, or more time be allotted for the first session, so that the papers and discussions need not be curtailed for fear of encroaching on the time of the next association.

### THE SESSIONS.

The first meeting of the convention was held Tuesday, June 7, at 10 a. m. President W. R. Webster made a short address in which he briefly outlined the advantages of the association and the benefits to be derived from the reading of papers upon subjects relating to the brass industry. The president's address was followed by the report of the secretary, Wm. M. Corse, in which he reviewed the progress of the year. He reported a gain in membership, there now being 275 names on the roll in good standing. In relation to furnishing bound volumes of the transactions he reported, in view of the fact that the dues were only \$5 per year, the association would not be able to fur-



THE OFFICIAL BADGE.

nish these bound copies unless the cost of binding was charged. This he thought would not exceed \$1 per volume. The secretary also read a report from Dr. Hillebrand of the United States Bureau of Standard at Washington, D. C., relating to the progress made by the committee on standardization of methods of analysis of the non-ferrous alloys. Dr. Hillebrand stated that two lots of metal had been obtained and were in the hands of the Bureau of Standards pending

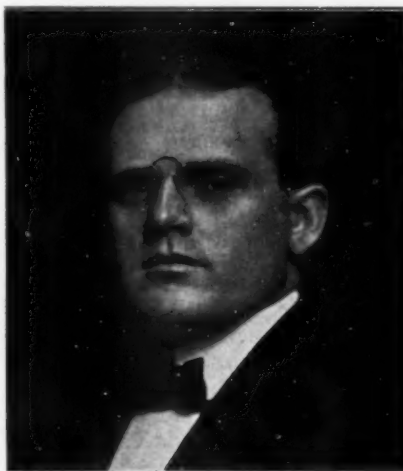
samples and report their findings with methods used.

In relation to growth of the association the secretary reported that great interest was being taken all over the country in the organization and there were now 275 members with good prospects for many more before the close of the convention. He reported few withdrawals and on the whole the association was in a flourishing condition. Just here it may be well to state that the matter of holding a midwinter session

#### OFFICERS OF THE A. B. F. A. FOR THE ENSUING YEAR.



N. K. B. PATCH,  
President.



W. M. CORSE,  
Secretary-Treasurer.



THOMAS EVANS,  
Vice-President.

preparation of standard samples for distribution. One of the ingots was a red brass mixture typical of sand casting alloys, made by the Lumen Bearing Company of Buffalo, N. Y., and was composed of copper, zinc, lead, tin, antimony, iron, manganese and aluminum. The other metal was yellow brass, typical of rolling mill alloys, made by the Bridgeport Brass Company, Bridgeport, Conn., and was composed of copper, zinc, tin, lead, iron and nickel. The samples from the above

as advocated by Chas. J. Caley in the May number of THE METAL INDUSTRY was discussed informally and the opinion of the majority consulted was that, at the present, the association was too poor to consider the proposition; but however every one agreed that the scheme was excellent and ultimately would be bound to be put into operation.

C. R. Stevenson, New York, then read an exhaustive and interesting paper on Cost and Cost System Ap-

#### OFFICERS OF THE A. F. A. FOR THE ENSUING YEAR.



ARTHUR T. WATERFALL,  
Past President.



MAJOR J. T. SPEER,  
Present President.



DR. RICHARD MOLDENKE,  
Secretary-Treasurer.

ingots will be prepared with the utmost caution, great care being taken that no other element than what is in the original mixture can get into the drillings. The sample from the yellow brass mixture in particular will be prepared by the use of a special machine, which the department is now building for the purpose. When the samples are ready for distribution, notices will be sent out and prominent chemists will be invited to co-operate and analyze the

plied. Considerable discussion followed the reading of the paper.

At the afternoon session held the same day two papers were read. One by E. S. Sperry of Bridgeport, Conn., on Fluxes as Applied to the Bass Foundry, and the other by H. M. Lane, Cleveland, Ohio, on the use of Magnesium in Deoxidizing Aluminum Alloys. The paper was based on the results of tests in remelting aluminum alloys and adding a small

amount of magnesium at each remelt (2%). Eight melts were made in all and after analyzing and testing the bars for tensile strength, the author was forced to admit that the results were disappointing. In fact he declares that the effect he had expected to get from the magnesium was really produced by chloride of zinc used as a flux. The third session was given up to an address by Dr. Jos. W. Richards of Lehigh University, South Bethlehem, Pa., on Electric Power Required to melt Brass, Bronze, etc. This paper dealt with the heat absorption efficiency obtained by

Progress, by C. T. Bragg, Mansfield, Ohio. Both of these papers are published in this issue of THE METAL INDUSTRY. The last and concluding paper was read by C. P. Karr, New York, on the Analysis of Lead in Brass Alloys, and was a masterly effort showing the result of careful and painstaking preparation; this paper will also be published shortly in THE METAL INDUSTRY.

## ELECTION OF OFFICERS.

The last meeting of the association was held June 9, 1910, and the election of officers for the ensuing

## VICE-PRESIDENTS OF THE A. B. F. A. FOR THE ENSUING YEAR.



W. L. ABATE.



L. W. OLSEN.

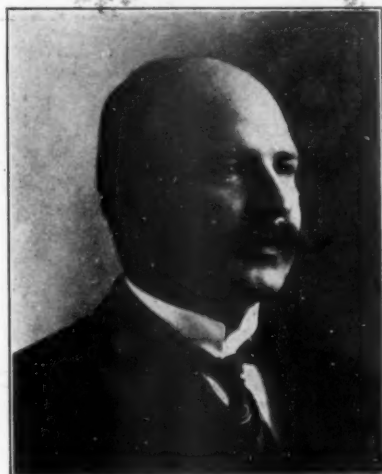


T. N. GAMBLE.

the various methods of melting practice. The information given was very valuable and interesting and caused considerable discussion. The paper and discussion will be published in an early issue of THE METAL INDUSTRY. A talk was then given by F. T. F. Stephenson of Detroit on The Value of the Association to its Members, at the close of which Dr. J. J.

year took place. The entire ticket prepared by the nominating committee composed of C. R. Karr, Chairman, New York; Geo. K. Elliott, Cincinnati; Philip Müller, Pittsburg; J. A. Condit, Buffalo; and C. T. Bragg, Mansfield, Ohio, was unanimously elected. The officers for 1910-11 are as follows:

President, N. K. B. Patch, Lumen Bearing Com-



RICHARD R. MITCHELL.



J. CESSNA SHARP.

Porter of Cincinnati University of Cincinnati, Ohio, read a paper on The Production of Foundry Men. This paper was a recital of the advantages of the co-operative courses in metallurgy as taught at the University of Cincinnati.

Other papers read at subsequent sessions of the convention were Selling of Brass Foundry Waste, by Jesse L. Jones, Pittsburg, Pa., and Modern Foundry

pany, Toronto, Ont., Can.; secretary and treasurer, W. M. Corse, Lumen Bearing Company, Buffalo, N. Y. The vice-presidents and their respective districts are as follows: Maine, New Hampshire, Vermont, Massachusetts, Rhode Island and Connecticut District, Richard Augenbraun, Yale & Towne Manufacturing Company, Stamford, Conn. New England Rolling Mills District, W. H. Carpenter, Bristol Brass Com-



pany, Bristol, Conn.; Pennsylvania, Delaware, Maryland, District of Columbia District, Thomas Evans, Eynon Evans Manufacturing Company, Philadelphia, Pa.; New York and New Jersey, W. L. Abate, general superintendent Nathan Manufacturing Company, 416 East 106th street, New York, N. Y.; Michigan, Ohio and Indiana, L. W. Olson, Ohio Brass Company, Mansfield, Ohio; Illinois (except city of Chicago) Missouri, Kansas, Colorado, New Mexico, Utah, Arizona, Nevada and California, J. N. Gamble, National Tube Company, Kewanee Works, Kewanee, Ill.; City of Chicago, Wisconsin, Minnesota, Iowa, North Dakota, South Dakota, Idaho, Nebraska, Montana, Washington and Oregon, John Wolff, L. Wolff Manufacturing Company, Chicago, Ill.; Virginia, West Virginia, North Carolina, South Carolina, Georgia, Florida, Alabama, Mississippi, Arkansas, Louisiana, Oklahoma, Indian Territory, Texas, Kentucky and Tennessee, J. Cessna Sharp, J. C. Sharp Brass Works, Chattanooga, Tenn.; Ontario and Western Provinces, Canada, Murray Woodbridge, General Brass Works, Toronto, Ontario; Quebec and Maritime Provinces, Canada, Richard R. Mitchell, The Robert-Mitchell Company, Ltd., Montreal, Canada.

At this meeting President Patch appointed W.

#### A NEW ASSOCIATION APPROACHES CONVENTION SIZE.

A communication was read at one of the meetings of the convention of T. C. Eichstadt, foreman plater of the Oakland Motor Company, Pontiac, Mich. This was a letter from Chas. H. Proctor, president of The National Electroplaters' Association of the United States and Canada. Mr. Proctor, whose association is just a year old, and has its headquarters in New York City, expressed the regrets of the association in not being able to accept the invitation of the American Brass Foundrymen's Association to meet with them in convention this year. He told of the growth of the new society and its aims. He expressed the hope that by next year the Electroplaters' Association would be strong enough to meet in convention at Pittsburg. In speaking of the relation his society bore to the Brass Founders, he declared that the electroplater was the "hand maiden" of the founder. The founder created the article, while the plater finished and beautified it. Mr. Proctor took occasion at this time to urge that some action be taken regarding the investigation of melting points of alloys. He thought that a committee might be appointed to formulate a table of standard melting points for the various mixtures used in brass founding. He said that in his experience he had found that castings that one day were all

#### OFFICERS OF THE VARIOUS COMMITTEES OF THE CONVENTION.



FRANK T. F. STEPHENSON,  
Chairman Local Committee.

W. P. PUTNAM,  
Chairman Sessions Committee.

EDWARD J. WOODISON,  
Chairman Entertainment Committee.

F. B. STEVENS,  
Treasurer Local Committee.

R. Webster, Bridgeport, Conn., Chairman; C. P. Karr, New York, and F. O. Clements, Dayton, Ohio, as a committee to obtain papers for the coming convention for 1911. It was also announced that a committee would be appointed shortly to confer with a committee from the American Chemical Society to standardize trade terms as applied to the brass foundry business. The members of this committee will be announced in the near future by President Patch.

#### THE NEXT CONVENTION.

Pittsburg, Pa., will probably be the convention city of 1911, as the choice of the president of The American Foundrymen's Association generally carries with it the convention. It is conceded that the election of Major C. J. Speer of Pittsburg, Pa., indicates that the 1911 convention will be held in that city. Major Speer made a strong plea for his city at the business meeting of the Manufacturers and Foundry Supply Association held on Friday evening, June 10.

Next in line for the coming years are named in regular order Milwaukee, Niagara Falls and Chicago, so that it seems that the project of having a permanent exhibition building in some centrally located city such as Niagara Falls has fallen flat for the present.

right would be defective the next, conditions being the same. He thought the melting or fusing point was the cause of most of the trouble, and hence his suggestion for the investigation. Mr. Proctor also advocated the midwinter session of the Foundrymen's Association, and recommended Waterbury, Conn., as the logical place for the first of such meetings. The letter was received and placed on file.

#### ALUMINUM IN THE AIR.

THE METAL INDUSTRY has already recorded how brass was represented at the North Pole by the brass instruments carried by Commander Peary. Now it seems as if aluminum is taking its part in the conquest of the air. In the recent record flights of Aviators Curtiss and Hamilton it is stated that the crank-cases of their machines were made of aluminum.

#### CORRECTION.

[In the May number of THE METAL INDUSTRY, page 205, in the article "Fluxes from the Viewpoint of a Metallurgist," the chemical name of Plaster of Paris is given as magnesium sulphate. This is incorrect, as it should be calcium sulphate. The common name for magnesium sulphate is epsom salts.—Ed.]



## THE FOUNDRY AND MANUFACTURERS' SUPPLY ASSOCIATION

The annual meeting of the Foundry and Manufacturers' Supply Association, held Friday evening, June 10, in a banquet hall of the Hotel Cadillac, was a very interesting and lively gathering. All of the affairs of the Association were gone over from finances to parliamentary rules. Frederic B. Stevens presided and made a gracious parliamentarian in his efforts to keep the subject in question before the house.

It was the sense of the meeting that the Foundry and

The election of officers resulted in the following: President, Geo. R. Rayner, of the Carborundum Company, Niagara Falls, N. Y.; first vice-president, Wilfred Lewis, of the Tabor Manufacturing Company, Philadelphia, Pa.; second vice-president, E. B. Frohman, of the S. Obermayer Company, Cincinnati, Ohio; third vice-president, T. S. Hammond of the Whiting Foundry Supply Company, Harvey, Ill.; fourth vice-president, Harry D. Gates, of the Thomas Pangborn Company, New York. Trustees for three years: F. N. Perkins, of the Arcade Manufacturing Company, Freeport, Ill.; H. M. Bougher, of the J. W. Paxson



THE BANQUET TO THE OFFICERS, COMMITTEEMEN AND THE TECHNICAL PRESS.

Manufacturers' Supply Association should be incorporated and a committee consisting of three is to be appointed by the president for that purpose, which committee is to report within ninety days.

The reports of the treasurer showed the Association to be in a flourishing condition, and it was voted to return \$1,500 of the surplus to those members who had exhibited at Cincinnati, and to increase the secretary's salary from \$1,000 to \$2,000 and the treasurer's from \$100 to \$200.

Company, Philadelphia, Pa.; E. H. Steedman, of the Curtis & Co. Manufacturing Company, St. Louis, Mo. Secretary, C. E. Hoyt, Lewis Institute, Chicago, Ill.; treasurer, J. S. McCormick, of the J. S. McCormick Company, Pittsburgh, Pa.

In addition to the annual meeting, the Foundry and Manufacturers' Supply Association held a dinner Thursday evening, June 9, at the Cadillac. Diners, speakers and audience had a very good time, all agreeing that Detroit's cuisine was above standard.

## LIST OF EXHIBITORS, WHAT THEY EXHIBITED, AND WHAT THEY HAD TO SAY ABOUT THE EXHIBITION.

The following list includes all the exhibitors at the Convention. There were 83 in number and comprised all of the manufacturers and dealers in foundry supply materials from all over the United States. The exhibition was held in the four buildings as shown in the May issue of THE METAL INDUSTRY situated in the beautiful grounds of the Michigan State Fair Association. The grounds are located seven miles from the center of Detroit and are easily reached by trolley, so that visitors experienced no difficulty in getting to the exhibition.

**THE ADAMS COMPANY**, Dubuque, Iowa. Molding machines, squeezers, snap flasks, pneumatic rappers, spruce cutters, grinding stands, milling machines, automatic gear hobbing machines. Represented by Glenn Muffly, John Nicol, F. O. Farwell, C. F. Reich, William Spensley, L. L. Rich.

"Though this is our first appearance in a foundrymen's convention, the results have by far surpassed our brightest hopes," declared Glenn Muffly, who was in charge of the army of salesmen in the Adams booth. The Dubuque firm had on exhibition twenty-eight different styles of machines. The pneumatic rappers and automatic gear hobbing machines attracted much at-

tention. Several sales were made during the exhibition. Mr. Muffly, like many other exhibitors, is opposed to the erection of a convention hall at any one place.

**AMERICAN BLOWER COMPANY**, General Offices, Detroit, Mich. Works, Detroit, Mich., and Troy, N. Y. Cupola blowers, exhaust fans, "Sirocco" fan system heating and ventilating apparatus, Electric lighting sets, electric forge blowers, small ventilating sets. Represented by R. T. Coe, M. L. Diver, B. E. LaFollette, A. N. Kelley, W. A. Fletcher.

**THE ANTHONY COMPANY**, Liquid Fuel Engineers, New York, N. Y. Oil burners for high and low pressure, pit crucible furnaces, tilting furnaces. Represented by N. W. Anthony, A. R. Anthony. Demonstrator, J. M. Neill.

Like the Adams Company, The Anthony Company, liquid fuel engineers, made its initial bow as exhibitors at the foundrymen's convention. "Yes, this is our first offense," remarked A. R. Anthony. "While we made no sales outright, I expect very gratifying results, for I think we have demonstrated that we have made a noiseless furnace that will melt brass in the same time as any other. I am not in favor of a permanent convention hall at Niagara Falls. As one man argued, I believe the men would spend more time at the falls than at the convention. Besides,

this is a sort of a vacation for many men, and in time they would naturally become calloused to the charms of Niagara."

**ARCADE MANUFACTURING COMPANY**, Freeport, Illinois. Arcade automatic molding machines, modern molding machines, Arcade squeezers, Norcross jolting machines, The Buck Roll-out Match Plate, sand conveyors, pattern plate demonstration. Represented by Edgar H. Morgan, Chas. Morgan, F. N. Perkins, W. C. Norcross, R. M. Burton, G. D. Wolfley, August Christen, Reeve Burton.

No less a person than President Perkins controlled the great exhibition of this firm. Perkins' exhibition resembled a small factory. The Arcade automatic moulding machine proved the great attraction—besides Perkins. About 20 of the machines were sold during the exhibition.

"Yes, it's rather difficult to describe just how much of a success this convention was," said Perkins. "From a business standpoint, it was immense. While I am in favor of a good central location where we can meet each year, I am not in sympathy with the movement to erect a hall at Niagara Falls. This site is rather far from the city, but I think we are all satisfied with the results."

\*BAIRD & WEST, sole selling agents of Detroit Solvay Coke, made

**THE BAYER PATTERN PLATE & MANUFACTURING COMPANY**, Cleveland, Ohio. Composition match plates, match plate composition, combination roll over and squeezer molding machines. Represented by John T. Bayer, G. Knock, Chas. W. Brown.

**THE BERKSHIRE MANUFACTURING COMPANY**, Cleveland, Ohio. Automatic molding machines, hand squeezers, combination hand squeezing and pattern drawing molding machines, aluminum snap flasks, power riddles and iron flasks. Represented by J. N. Battenfeld, C. F. Battenfeld, R. H. York.

**S. BIRKENSTEIN & SONS**, Chicago, Ill. Ingot copper, pig lead, spelter, block tin, babbit, scrap metal and drosses of all kinds. Represented by S. Birkenstein and S. Berliner.

Metal of all kinds filled the booth of this firm, where S. and B. Birkenstein held forth and explained the superior qualities of their goods. "The exhibition is one of the most attractive I have seen," said S. Birkenstein. "This of course does not mean that it was a mere beauty show. It was a business and industrial affair as well. For my part, I am highly elated over the success of the thing. We succeeded in making our stock known to many persons who were strangers to us before the convention. About that permanent convention hall, I'll not say



ADMINISTRATION BUILDING SHOWING "STILL" EXHIBITS.

by The Solvay Process Company, Detroit, Mich. Represented by Chas. W. Baird, Edwin R. Stoughton.

**JONATHAN BARTLEY CRUCIBLE COMPANY**, Trenton, N. J. Crucibles, Retorts, stoppers and a variety of graphite specials. Represented by Lewis H. Lawton; secretary, Samuel H. Dougherty.

Lewis H. Lawton, the secretary of this firm, and Samuel H. Dougherty were in charge of a rather imposing exhibition of crucibles, stoppers, retorts, and a fine line of graphite specials. "So far as we are concerned this exhibition proved an immense success," said Lawton. "While we specialized no particular thing, our regular line of wares were the subject of much discussion. About that Niagara Falls meeting place, I say, 'No.' I think such a move would create rivalry between the East and West. It has been some time since we've had a convention in the East. The easterners are becoming tired of going west. But it would be unwise to hold a convention in one place each year, for business reasons also. I am inclined to believe that this place in Detroit is almost perfect; it's so far from town that when people come out, they have to stay out all day."

\*Received "Foundry" Cup for best "still" exhibit.

a word." Then Mr. Birkenstein returned to a clamoring horde of persons who had gathered at his booth.

**BROWN SPECIALTY MACHINERY COMPANY**, Chicago, Ill. Coring machines and equipment. Represented by E. A. Rich, Jr.

**VICTOR R. BROWNING & COMPANY**, Cleveland, Ohio. Locomotive cranes, automatic grab buckets, hoisting and conveying machinery.

**A. BUCH'S SONS COMPANY**, Elizabethtown, Pa. Park's portable jar and squeeze molding machines, patented aluminum snap flasks, special method of mounting patterns for molding machine use, special cast iron flask for gravity molding machines, patented steel bar or flask. Represented by R. S. Buch, president; P. J. Potter.

**THE BUCKEYE PRODUCTS COMPANY**, Cincinnati, Ohio. Parting compounds, brass flux, foundry specialties and supplies. Represented by Charles J. Goehringer, Edward H. Leisl.

**BURROUGHS ADDING MACHINE COMPANY**, Detroit, Mich. Manufacturers of adding and listing machines. Represented by F. H. Dodge, general sales manager; F. S. Wheeler, district manager, and Ward Gavett, active charge of booth and matters pertaining to exhibit.



**CALUMET ENGINEERING WORKS, Harvey, Ill.** Tumblers, ladles, trolley system, Cupolas, etc. Represented by H. W. Schulze, J. T. Krieger, C. A. Dugan.

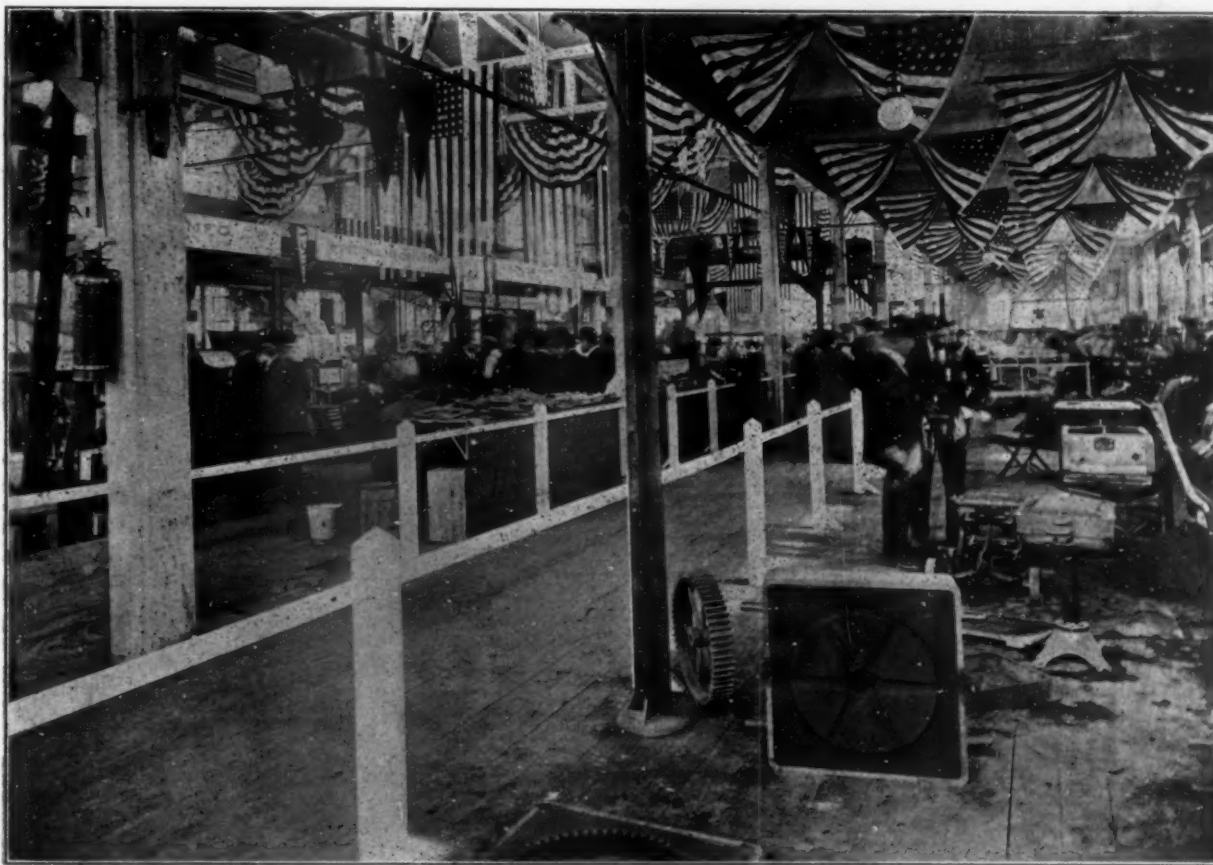
**THE CARBORUNDUM COMPANY, Niagara Falls, N. Y.** Carborundum aloxite wheels, carborundum rubbing bricks, carborundum sharpening stones, emery cloth and paper, carborundum fire sand. Represented by G. R. Rayner, C. D. Sargent, F. B. Jacobs, H. A. Eaton, O. C. Dobson.

Few booths were more patronized than this one. There were grinding wheels in operation. G. R. Rayner was in charge of the place, and showed a fine line of carborundum aloxite wheels, rubbing bricks, sharpening stones, and similar wares. Mr. Rayner was greatly pleased with the results of his exhibit. He has certain ideas about building that convention hall, and naturally champions Niagara Falls. "In the first place, Niagara is only a night's journey from the industrial sections of America. Second, by going there every year it would make it much easier for the exhibitors, and third, we expect to soon have at Niagara Falls

**THE CRESCENT MACHINE COMPANY, Leetonia, Ohio.** Manufacturers of wood working machinery.

**DETROIT FOUNDRY SUPPLY COMPANY, Detroit, Mich.** Core oven, brass furnace, oil burners, glue heaters and cooker, plating dynamos, buffing wheels, platers' chemicals, roll-over molding machine, bull dog shovel, Gautier crucibles, nicked work from various stove plants, new eccentric adjustable clamp, aluminum snap flask, blow torches, fire brick, galvarim riddles, facings, Grimes roll-over molding machine. Represented by Edward J. Woodison, W. Bruce Howard, Wm. H. Case, Wm. H. Fitzpatrick, Wm. W. Murray, Jas. C. Dissette, Chas. D. Yahne.

Twenty-six machines left the booth of this firm during the exhibition. Edward J. Woodison, president of the firm, with a corps of assistants, was on hand with a complete line of foundry supplies. Mr. Woodison declared it was the most successful session he had experienced—and he is no youngster. He is opposed to the permanent convention hall plan, on the ground that it would in time become monotonous, and that it is for the



MAIN BUILDING SHOWING EXHIBITS OF FOUNDRY SUPPLIES AND APPARATUS IN MOTION.

the convention halls and hotels that the convention needs and then we have the falls as a side show."

**CENTRAL FOUNDRY SUPPLY COMPANY, Columbus, Ohio.** Foundry equipment and supplies.

**CHICAGO PNEUMATIC TOOL COMPANY, New York and Chicago.** Air compressors, pneumatic shipping hammers, sand rammers, sand sifters, drills and hoists, electric drills and grinders. Represented by J. F. Duntley, F. E. Lawson, R. P. James, W. C. Walker, G. W. Parker.

**THE CLEVELAND WIRE SPRING COMPANY, Cleveland, Ohio.** Steel shop and foundry barrels, steel tote boxes, sprue boxes, factory shelving, core trays and racks, coiled wire springs, wire forms. Represented by J. W. Campbell.

**THE CUTLER-HAMMER MANUFACTURING COMPANY, Milwaukee, Wisconsin, New York, Chicago, Boston, Pittsburg, Cleveland, San Francisco.** Electric controlling devices. Represented by Mr. Ludwig.

best interest of the business to move about the country at conventions.

**JOSEPH DIXON CRUCIBLE COMPANY, Jersey City, N. J.** Crucibles for both brass and steel melting, special shapes and formulas for various purposes, phosphorizers, stirrers, skimmers, stoppers, nozzles, sleeves, etc., etc. Everything in the line of graphite refractories, foundry facings, motor brushes, and all graphite products. Represented by Dudley A. Johnson in charge; W. B. Allen, F. R. Brandon, Chicago office; A. L. Haasis, New England territory; Frank Krug, Philadelphia territory; John A. Condit, L. M. Chase, northern territory; C. D. McIntosh, St. Louis territory; George Neighbor, factory superintendent.

This old firm, which appears at numerous conventions each year, was on hand with an imposing booth, and a young army of salesmen under the direction of Dudley Johnson. Almost everything in the crucible and graphite line was displayed. "One of the most successful conventions I have attended," observed



Mr. Johnson. "It's some distance from town, and conditions out here are not perfect, but the decorations, the crowds and the great enthusiasm sort of drowns the small defects. Our stock was given a cordial reception."

**THE DETROIT TESTING LABORATORY**, Detroit, Mich. Associated with The Toronto Testing Laboratory, Ltd., 18 Saturday Night Building, Toronto, Ontario. Represented by W. P. Putnam, J. D. Stoddard, Hugh Lamont.

"We have received numerous inquiries that probably will lead to business," said W. P. Putnam, who with J. D. Stoddard and Hugh Lamont represented the laboratory. Mr. Putnam is another of the long list of exhibitors who is opposed to the permanent convention hall plan.

**DETROIT HOIST & MACHINE COMPANY**, Detroit, Mich. Manufacturers of pneumatic hoisting machinery. Represented by J. C. Fleming, president; F. B. Fleming, sales manager.

**STANLEY DOGGETT**, New York City. Foundry specialties, parting compounds, manganese dioxide, soapstone, graphite facing, facings powdered charcoal, dioxide of manganese flux, ferro-manganese, ferro-silicon, iron and steel, cement, metal workers' soapstone, crayons and pencils. Represented by W. S. Rupert, Wm. Busser, Stanley Doggett.

foundries, especially heating Thermit cans for reviving dull iron in the ladle, making semi-steel in the ladle, keeping risers liquid and preventing piping in ingots. Represented by Henry S. Mann, J. G. McCarty.

**HANNA ENGINEERING WORKS**, Chicago, Ill. Screen shakers, revolving dumping riddles, mold dryers, riveters and Rathbone multiple molding machines. Represented by Wm. L. Laib, James T. Lee.

**HAUCK MANUFACTURING COMPANY**, New York City. Oil burning appliances, portable heaters, skin drying burners, ladle heaters, kerosene torches, cupola lighters, mold driers, portable or stationary oil burners. Forges for annealing, brazing, pipe bending, heating rivets, blacksmithing, etc.

**HAWLEY DOWN DRAFT FURNACE COMPANY**, Chicago, Ill. Manufacturers of Schwartz metal melting furnaces, Reyelbec coke crucible furnaces, oil crucible furnaces.

While the booth of this firm was not a mark of beauty, it proved a Mecca for practically inclined persons who examined the Hawley furnaces. W. J. Stow was in charge. A very fine looking line of metal melting furnaces were shown.

**HERMAN PNEUMATIC MACHINE COMPANY**, Pittsburg, Pa. Works: Zelenople, Pa. Herman jarring molding machines,



HORTICULTURAL BUILDING WHERE MOLDING MACHINES WERE SHOWN IN ACTION.

**THE FALLS RIVET & MACHINE COMPANY**, Cuyahoga Falls, Ohio. The Wadsworth improved core making machines, core ovens, sand mixing and compounding mills, core cutting off and coning attachments, steel core racks, core prints and the Wadsworth vertical jar-ramming core-forming machine; there being a battery of six making stock cores, standard cores with tapers on ends and chambered cores. Represented by Geo. H. Wadsworth, Geo. White.

**FEDERAL FOUNDRY SUPPLY COMPANY**, Cleveland, Ohio, Milwaukee, Wis. Ceylon plumbago, Bright's dry core binder, ventless facing, etc., also molding machines. Represented by W. J. Adams, Ralph Ditty, W. R. Beers.

**THE FOUNDRY SPECIALTY COMPANY**, Cincinnati, Ohio. Universal parting, Partine, brass flux, Fluxine, and foundry specialties. Represented by F. W. Weissmann.

**GOLDSCHMIDT THERMIT COMPANY**, New York City. All materials and appliances required for the use of the Thermit process in

jarring molding machines with roll-over and pattern drawing device, jarring and stripping plate machine, combination jarring and squeezer machine. Represented by Martin L. Heyl, Chas. Herman, Harry T. Fraunheim, John J. Lawlor.

**HICKMAN, WILLIAMS & Co.**, Louisville, Chicago, Cincinnati, Pittsburg, St. Louis, New York, Philadelphia, Boston, Birmingham. Pipe iron, coke, steel, ferro-manganese, ferro-phosphorus, ferro-silicon, silico-speigel. Represented by H. E. Pierce, E. P. Hettiger, H. Black, John U. Byrd, T. C. Ward, F. S. Fears, J. B. Holloway, S. E. Frazee, Richmond Nicholas R. B. Miller, T. L. Powell, T. A. Arthur, R. W. Kellow, W. L. Hoffman, B. P. Williams, Day Williams, John Baker, Jr., L. E. Patton, W. L. Hoffman, C. A. Reed, L. H. Miller.

**THE HILL & GRIFFITH COMPANY**, Cincinnati, Ohio, Birmingham, Ala. Foundry facings, core compounds, parting compounds, patent tamping head molders' shovels, bellows, brushes, etc.

Represented by John Hill, J. M. Glass, M. Z. Fox. Exhibit in charge of J. M. Glass.

The display of this company was crowded during the entire exhibition. J. M. Glass, one of the company's representatives, declared that it was the most successful exhibition in the history of his firm. The Graf roll-up device, something new in the firm's line of stock, proved the greatest hit of the year, according to Mr. Glass. Business was far better than he expected. "It would be an unwise move to build a convention hall at Niagara Falls," said Mr. Glass. "Many persons take a trip like this to combine business with pleasure. For a time it would be all right to sojourn at the Falls, but eventually it would become monotonous."

**INGERSOLL-RAND COMPANY**, New York City. Compressed air appliances applicable to foundry work, consisting of motor-driven air compressor, pneumatic sand rammers, pneumatic chipping hammers, pneumatic drills, pneumatic motor hoists, pneumatic stationary motors. Represented by William H. Armstrong, W. A. Armstrong, James Moran, James J. Kelly.

**WALTER MACLEOD & COMPANY**, Cincinnati, Ohio. Sand blast machines, both pressure and suction types, compressed air blacking swabs or sprayers, babbitt and lead melting furnaces, oil burners for cupola lighting, skin drying molds, brazing, etc. Paint and whitewashing spray machines. Represented by The S. Obermayer Company.

**METAL DROSS ECONOMY COMPANY**, Bristol, Conn., and Brooklyn, N. Y. Represented by A. L. Haasis, president and sales manager; W. H. Carpenter, vice-president and general manager.

**MICHIGAN SMELTING & REFINING COMPANY**, Detroit, Mich. Red and yellow brass ingot, castings from same made by users. Solders and babbitts, new metals. Represented by Joseph Sillman, general manager, Albert J. Hall, metallurgist, T. R. McNamee, S. R. Ginsburg and H. Levitt, salesmen.

Joseph Sillman had an attractive collection of samples in this firm's display. Red and yellow brass ingot, new metals, and other things in that line were shown. Mr. Sillman is elated over the results of the convention.



THE "TENT" WHERE THE FURNACES HELD FORTH IN FULL BLAST.

**THE INTERSTATE SAND COMPANY**, Zanesville, Ohio. Molding sands. Represented by E. M. Ayers, L. K. Brown, U. E. Kanavel, E. R. Wilson.

**T. P. KELLY & COMPANY**, New York City and Chicago. Bellows, blacking mixtures, blowers, brushes, burners, cement, chaplets, core binders, core compound, core flour, core ovens, core oil, core wash, crucibles, cupolas, facings, fillers, leather and wood fillet, fire brick, flasks, flasks (snap), wax wire, foundry equipment, foundry supplies, furnaces (brass), graphite, ladles, lead, black lead, molding dryers, molding machine oils, parting compounds, pattern letters, plumbago, rammers, rapping plates, riddles, sand sifters, seacoal, shovels, swabs, tools, torches.

**E. KILLING'S MOLDING MACHINE WORKS**, Davenport, Iowa. Universal jarring machine, roll-over machine, automatic power squeezer, combined foot jarring-rockover, long pattern-draw. Represented by E. Killing, C. P. Aabye, Wm. White, A. W. Fox.

**KROESCHELL BROTHERS COMPANY**, Boiler and Steam Fitting Works, Chicago, Ill. Crucible furnaces, ladle heaters, dry stoves, etc. Represented by Mr. Schwartz.

**J. S. MCCORMICK COMPANY**, Pittsburg, Pa. Continuous sand mixer, Deane pneumatic sand sifter, Blake wire straightener, 20th Century molding machine and facings. Represented by J. S. McCormick, T. E. Mallone, S. R. Costley.

**BENJAMIN MIDDLEDITCH**, Detroit, Mich. Manufacturers of brass, bronze and aluminum, founders' and finishers' machinery, flasks, etc.

Mr. Middleditch, while not greatly interested in the exhibition, as his display is only a side line of his business, expressed himself as greatly pleased over the outcome. "It is a good thing for the business," he declared. "I am opposed to building a hall at Niagara Falls and holding a convention there each year. It would become tiresome."

**THE MILLERS' PRODUCTS COMPANY**, Chicago, Ill. Manufacturers of Black Diamond core compound and all grades of foundry flour.

**THE MONARCH ENGINEERING & MANUFACTURING COMPANY**, Baltimore, Md. Latest improved furnaces, using oil or gas as fuel for melting and heating, Acme core oven, steel foundry ladle, heating equipment, aluminum furnaces, Alls' "Eclipse" bolt heating furnaces, blowers, etc. Representatives, David R. Steele, M. W. Woodburn, James H. Fowler, H. D. Harvey.

This is one of the few firms which report that their business was not what they expected. They were one of the unfortunate aggregations that were relegated to positions in the big tent. "Why, we worked in six inches of water, trying to install our engines," declared M. W. Woodburn, with a peeved manner. "Some of the machines can't be operated because of the water in the pits. The conditions in the tent sort of worked against us."



**MUMFORD MOLDING MACHINE COMPANY**, New York City. Works: Plainfield, N. J. Squeezer with vibrator and match plate, high trunnion squeezer with vibrator and match plate, power ramming plate pattern vibrator machine with starting power pattern draft, plain jolt ramming machine operated in connection with hoist for rolling molds and sand pattern guide for match plates.

**NATIONAL CORE OIL COMPANY**, Buffalo, N. Y. High-grade core compounds and foundry specialties. Represented by C. H. Cotton, P. L. Crandall, L. C. Allen.

**NORTHERN ENGINEERING WORKS**, Detroit, Mich. Manufacturing Foundry Engineers. Makers of Northern cranes (electric, pneumatic and hand power), Newton cupola, electric and pneumatic hoists, foundry ladles, trucks, core oven equipment, tumbling barrels, foundry elevators, overhead track and trolley systems, surface and industrial railways and turntables. Represented by W. G. Chesebrough, Walter Robinson, W. S. Reid, H. W. Standart, Geo. A. True.

All kinds of cranes were traveling around the two booths which this firm had. The giant Northern crane attracted much attention. W. G. Chesebrough, in charge of the exhibition, reports that his business shared in the success of the convention. Walter Robinson, who is with Chesebrough, ventured an opinion that a Niagara Falls convention hall for the organization would

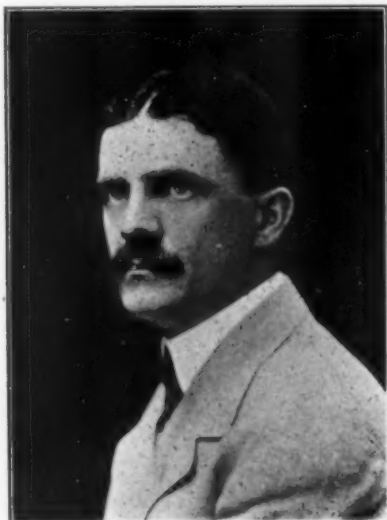
**THE OHIO SAND COMPANY**, Conneaut, Ohio. Molding sand. Represented by F. E. Gordon, Arthur S. Barrows, W. R. Thompson.

**THE OSBORN MANUFACTURING COMPANY**, Cleveland, Ohio. Rock-over jolt molding machines, plain jolt molding machines, hand rock-over drop draft molding machines, "Osborn" Flask Stripping molding machines, "Economy" wire wheel brushes, "Cyclone" molders' bellows, "Sivquick" riddles. Represented by H. R. Atwater, F. D. Jacobs, E. T. Doddridge, J. H. Galloway, J. C. Boynton.

One glaring illustration of just how big a success the convention proved to be, is the statement of F. D. Jacobs, one of the salesmen for this firm. "We sold machinery that will travel to Stockholm, Sweden," declared Jacobs. "This exhibition has had a far reaching effect on all those who are involved in it. We see success on every hand. While I can't say just how many machines we sold, you can rest assured that it was as great a number as was ever sold at a convention." The Osborne molding machines proved the best card of the exhibit.

**THOMAS W. PANGBORN COMPANY**, general offices, New York City. Works and showrooms, Jersey City, N. J. Modern high pressure sand blast systems, sand separating machines, sand dryers and air separators. Represented by John C. Pangborn, secretary; Harry D. Gates, sales manager; Jesse

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GEORGE R. RAYNER,  
President.



F. N. PERKINS,  
Past President and Trustee.

be detrimental to the business, and would cause the men who seek pleasure to absent themselves from the meetings.

**THE S. OBERMAYER COMPANY**, Chicago, Ill. Head offices, Cincinnati, Ohio. Western office and factories, 18th and Rockwell streets, Chicago, Ills. Pittsburg offices, 35th and Charlotte streets. Sea Coal Mill, Rillton, Pa. St. Louis office and warehouse, 1310 North Broadway. Milwaukee office, 38 Loan and Trust Building. Foundry equipment, supplies and merchandise. Represented by S. T. Johnston, F. H. Dodge, F. J. Brunner, O. J. Peterson, J. E. Evans, C. M. Barker, W. M. Fitzpatrick, E. D. Frohmann, H. F. Frohmann, G. H. Kersting.

Though S. T. Johnston, who was in charge of the Obermayer Co.'s booth, remarked that the State fair grounds were quite a distance from the city, he was in no way disappointed over the results of his work. Though the Obermayer booth was not stocked with machinery, it was elaborately decorated with plates that explained the merits of the Obermayer products. Mr. Johnston, too, looks with disfavor on the convention hall idea.

**OLIVER MACHINERY COMPANY**, Grand Rapids, Mich. Pattern makers' wood working machinery and pattern makers' supplies. Planers, jointers, band saws, circular saws, Sanders' wood trimmers, gap lathes, face lathes, wood lathes, borers, grinders, benches, vises, clamps, fillet, dowels, etc. Represented by Jos. W. Oliver, A. N. Spencer, J. P. Schmidt, W. Y. Mentzer.

J. Bowen, Eastern sales representative; Willis S. Doane, Middle West sales representative; Alfred L. Holmes, Western sales representative; Foster J. Hull, mechanical superintendent; Raymond F. Smith, New York district sales representative.

Pieces of machinery that showed the work of the Pangborn high pressure sand blast machines were the best exhibits in this booth. John C. Pangborn, with a large corps of assistants, took part in some real fine business deals during the convention.

**PARKER BROS. COMPANY, LTD.**, Detroit Mich. Sales agent for molding sand, fire clay, fire brick and all grades of coal and coke. Ohio Sand Company, Conneaut, Ohio, miners and shippers of all grades of molding sand. Ayres Mineral Co., Zanesville, Ohio, miners and shippers of all grades of molding sand. L. K. Brown, Zanesville, Ohio, miners and shippers of all grades of molding sand. Interstate Sand Co., Zanesville, Ohio, miners and shippers of all grades of molding sand.

**J. W. PAXSON COMPANY**, Philadelphia, Pa. Manufacturers of foundry equipment, cupolas, sand blasts, ladles, molding machines, foundry facing and molding sand, magnetic separators, tramrail and tripod sifters. Philadelphia office represented by H. M. Bougher, president, Geo. Moore, A. W. Moyer and I. F. Kremer. Toledo office by W. Scott Thomas. Providence office by W. T. Nicholson. Baltimore office by W. Beatty.



"Great," remarked A. W. Moyer, one of the Paxson salesmen, when asked how his firm fared at the exhibition. "One of the best years we ever had," he declared. "I haven't given the permanent convention place problem much thought, but offhand, I believe it is a fine thing."

**T. J. PETERSON COMPANY**, New York, Chicago. Core oils, parting, rosin, silica wash, etc. Represented by James Kerr, H. S. Peterson, J. Purvis, A. B. Elwes.

**PICKANDS, BROWN & COMPANY**, Chicago, Ill., Milwaukee, Wis. Solvay coke and pig iron. Represented by J. A. Galligan, B. T. Bacon, G. A. T. Long.

**HENRY E. PRIDMORE**, Chicago, Ill. Small square stand stripping plate machines and patterns, large square heavy double shaft stripping plate machine and patterns, stove plate rock-over machine and patterns, rock-over drop machines fitted with automobile patterns, power ramming rock-over drop machine and patterns, special core molding machine. Represented by Edward A. Pridmore, R. E. Turnbull, D. F. Eagan, W. W. Miller.

Mr. Pridmore took occasion to remark that he did as well as he expected. It was a good convention both in a business and social way, he opined. Mr. Pridmore has no convictions in regard to the convention hall problem.

**THE Q. M. S. COMPANY**, Plainfield, N. J., New York, Chicago.

and facing sands. Represented by V. E. Minich, John Bradley, B. F. Doup.

**WM. SELLERS & COMPANY, INCORPORATED**, Philadelphia, Pa. Centrifugal sand mixing machines, drill grinding machine. Represented by Edward L. Holljes.

**THE W. W. SLY MANUFACTURING COMPANY**, Cleveland, Ohio. Exhaust cleaning mills, dust arrester, cinder mill, rosin mill, white iron stars. Represented by W. W. Sly, W. C. Sly, H. R. Morse, D. A. Livensparger.

**J. D. SMITH FOUNDRY SUPPLY COMPANY**, Cleveland, Ohio. Natural draft furnaces, aluminum melting furnace, rolling drawer core ovens, sprue cutter, water tumbler, grinder, sand blast installation and three different styles of molding machines. Represented by P. G. Smith, J. S. Smith, M. S. Finley, Jos. Harrison, F. A. Coleman.

Ovens and furnaces displayed by this company were looked over by large crowds. F. A. Coleman, one of the officers, declared that the results were very gratifying. Mr. Coleman is another opponent of the permanent convention hall plan.

**THE STANDARD SAND & MACHINE COMPANY**, Cleveland, Ohio. Machinery for treating sands for all kinds of foundry practice. No. 0 and our medium size No. 1 or No. 2 mixing, rolling, crushing and blending plant. No. 1 standard batch mixer with steam oil pressure attachment. "O" batch mixer,

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C. E. HOYT,  
Secretary.

Cylindrical air hoists, hand power traveling cranes, I beam trolley, I steel foundry saw. Represented by R. H. Post, F. R. Phillips.

**ROBESON PROCESS COMPANY**. General office, Au Sable Forks, N. Y. Works, Au Sable Forks, N. Y., Covington, Virginia. Flutrin core binder. Represented by D. S. Robeson, Henry R. Donald, Martin Pierce.

**ROBINSON AUTOMATIC MACHINE COMPANY**, Detroit, Mich. Makers of automatic machines for all kinds of metal polishing. One of the largest exhibits displayed. Six or seven of the massive pieces of machinery made by this firm were sold.

**ROCKWELL FURNACE COMPANY**, New York City. Oil, coal and gas furnaces, oil and gas burning appliances, complete furnace equipment. Represented by W. S. Quigley and A. L. Stevens.

This exhibit resembled a cozy office. The blue prints of the Rockwell furnace adorned the walls. Of course that wasn't all, for W. S. Quigley and A. L. Stevens did some rather convincing rhetorical stunts when visitors chanced to examine the drawings.

**ROGERS, BROWN & COMPANY**, Cincinnati, New York, Chicago, Buffalo, Pittsburgh, Cleveland, Boston, St. Louis, Birmingham, Philadelphia. Pig iron, coke, fluorspar. Exhibits of pig iron and unusual castings made from pig iron. Represented by Henry B. B. Yergason.

**THE SAND MIXING MACHINE COMPANY**, New York City. Machine for cutting molding sand and for mixing core sands



J. S. McCORMICK,  
Treasurer.

one power adjustable screen, one pulverizing and disintegrating machine, a full line of samples of molding sands. Represented by H. E. Boughton, J. A. Boughton, T. J. Morgan.

**STERLING WHEELBARROW COMPANY**, Milwaukee, Wis. Special rolled steel foundry flasks, foundry wheelbarrows, trucks, etc. Represented by I. R. Smith, H. G. Mindrum.

**FREDERIC B. STEVENS**, Detroit, Mich. Foundry facings and supplies, polishers' and platers' compositions, Spanish felt wheels, cotton buffs, etc.

Mr. Stevens appeared in person, at his alluring booth with a wax figure. "First I recommend THE METAL INDUSTRY for keeping within its field—not taking up iron, as some of the iron papers are attempting to cover brass," he declared, when asked for an opinion on the convention and exhibition. "The subject of the brass industry is big and broad enough for constant investigation and continuity of thought; so concentration in so good a cause is better than exploitation in many. As to the permanent exhibit, as compared to exhibitions as now given annually in different cities there is good argument on both sides of this subject, and I have not given it sufficient thought to enable me to express a definite opinion. What exhibit attracted the most attention? Why, I suppose that of some of my competitors."

**\*THE TABOR MANUFACTURING COMPANY**, Philadelphia, Pa. Standard power squeezing machines, roll-over machines operated by hand and by power, shockless jarring machines,

\*Received "Foundry" cup for moving exhibit.

combined jarring and roll-over machines and combined jarring squeezing roll-over machines. Represented by John T. Ramsden, in charge, C. W. Coleman, J. H. Coleman, and C. H. Ellis, salesmen.

THE UNITED STATES GRAPHITE COMPANY, Saginaw, Mich. New York, Philadelphia, Pittsburg, Chicago, Denver, San Francisco and Seattle. Plumbago foundry facings. Represented by H. C. Woodruff, Frank B. Godard, J. G. Drought, R. A. Corrigan.

WHITING FOUNDRY EQUIPMENT COMPANY, Harvey, Ill. Cupolas, tumblers, ladles, elevators, air hoists, sand sifters, brass furnaces, turntables, trucks, core ovens, core oven cars, electric traveling cranes, hand power cranes, jib cranes and other labor saving devices for foundries. Represented by C. A. Hardy, P. A. Dratz, R. H. Bourne, F. A. Rundle, Crad Hughes, T. S. Hammond.

WHITEHEAD BROS. COMPANY, New York, Providence, Buffalo. Foundry supplies.

J. B. WISE, Watertown, N. Y., manufacturer. M. R. V. brass melting furnace, tilting type, permanent crucible, using coke as fuel. Represented by R. F. Goyne.

"What is my opinion in this convention? From an exhibitor's point of view it has been a very good one. Also I think that a good idea is to have a permanent exhibition place and save all

A quiet master founder ready to answer all questions on pure copper castings was Westinghouse Reardon.

Metallurgist Jones expressed his opinion that early rising and scrap metal dealers are one and the same.

Aurora Borealis Stephenson, F.T.F., M.D., E.C., A.C., M.E., Oxy.Ac.E. explicitly obeyed the orders of his committee-by-G.

Welcome Waterfall extended the glad hand and genial smile without the customary marble heart.

Major Speer drove home his javelin for Pittsburg, 1911.

The A. B. F. A. has lost its Naugatuck Valley official dignity since President Webster has retired. However, he will still be present in spirit.

The calm, dispassionate Perkins did not look like his own title of the "Official Grouch" of the F. M. & S. A. He always believes in paying his way.

Foreman Founder Eugene Smith received a wireless message from T. R. congratulating him on being the father of ten children.

The Official Turnkey—J. J. Wilson, who opened the door at the Detroit shops.

French-Canadian L. L. Anthes was not at all surprised at being taken for a native American.

Fiery Furnace Quigley did not tend the fires this year, but

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WILFRED LEWIS,  
1st Vice-President.



E. B. FROHMAN,  
2d Vice-President.



T. S. HAMMOND,  
3d Vice-President.



HARRY D. GATES,  
4th Vice-President.

the bother and delay that we are subject to by going to a different city every year. I think a permanent place should be situated at some point intermediate between New York and Chicago. One objection I have to the way things are run at present is the taking of the afternoon outing in the middle of the week. The exhibitors, who spend hundreds, even thousands, of dollars coming here, are entitled to the attention of everyone until the end of the week. The outing should be taken on Friday afternoon. During the week they can give the ladies a good time every day and keep the men at business."

#### CONVENTION PERSONALS.

Bearing Metal Allan was seen to stroll around deep in thought. His mind was so intent on the "Patent Controversy Over Bearing Metals" that he overlooked hotel accommodations, but succeeded in finding two friendly roofs.

The learning of Lehigh University was represented by Doctor Richards, with simplicity and modesty and without a silk hat.

Handsome Thomas Evans wore the proverbial Philadelphia Quaker countenance modied to modern times.

Chain-Lightning Coleman and Midnight Worker Smith pushed off surplus energy on steel foundrymen without avail. Hereafter they will pin their faith to brass.

Treegarden Baumgarten talked as smoothly as core oil and was quite as impressive.

passed around mind prints, among the pearls of thought were the following:

"Fish is an excellent brain food, but sometimes its a shame to waste the fish.

"To be good is to be lonesome.

"A happy man is a better thing to find than a five dollar bill.

"When a competitor starts knocking, put him on your payroll. Never mind what he says so long as he talks."

R. F. Goyne, M.R.V., F.R.G., was forcible and eloquent in furnace logic.

Parliamentarian Stevens, F. B., practiced on his wax figure when he was not presiding or selling.

The Venerable Sly, a gentleman of the old school, kept a careful watch on his strenuous son and the "strenuous" was not crushed by grinding away at his miniatures.

Glenn Muffley, the advertising student, had a keen penetrating look for solicitors and a smile for statements of circulation. Jonathan Bartley, though absent in body, was present in spirit, with glazed crucibles.

Jolly Jovial Sol, of the Berliner family, was always ready.

Buckeye Products Goehringer was afraid he would lose weight in selling glutrin.

Rayner, the carborundum crystal, asked everyone if they had seen Niagara Falls.



J. W. Campbell walked around with springs in his heels.

W. P. Putnam and J. D. Stoddard were everywhere looking for trouble—that is foundrymen's troubles.

Dudley Johnson, the smooth graphiter, strange to say, liked to talk on refractory Dixon subjects.

Wadsworth, the energetic George, would forget his h's in talking core machines.

Glass eyes were ever present at the Hill and Griffith.

Two jolly Deutchers spoke on Kroeschell-Schwartz subjects.

The happiest man at the convention was J. S. McCormick, with a 100 per cent. increase in salary, F.S.M.S.

Smelter Sillman and Chemist Hall said the only metallic State was Michigan.

Middleditch, the quiet, liked to travel in the middle of the road and keep out of all ditches.

Rolling Mill Bill has become a critic and believes in "rock salt."

Monarch Steele-Harvey, he of the Baltimore Smile, still believes that whisky is a good argument in selling furnaces.

Plainfield Mumford believed in plain talk about molding machines.

S. T. Johnston took pleasure in entertaining his visitors in Obeymayer easy chairs.

H. E. Pridmore believed in "Eganian" representation at the smoker.

Gates Ajar was firm in his conviction that the East is in the grip of Pangborn.

No militarism in the show this year, owing to the absence of Colonel Bleyer, Captain Ringer and Lieutenant Cliff. There was only a Hawley without the draft and a faithful stow-ker.

Secretary Corse nearly lost his family in the convention strife, but retained his voice.

Chemical Analysis Karr was ever on the hunt for metals and candidates.

Lunar Lumen Patch illuminated, ruminated, agitated, questioned and dominated A.B.F.A. affairs.

Abate, the genial, struck a few blows in the ribs.

Reidenbach, the Rochester Angel, preached early retiring and early rising. He set an example by leaving the smoker before the smoke.

Clements passed the word along that he was to become a smelter and independent of metal rogues.

Sparkling Diamond McFadden had his Irish wit with him and plenty of story listeners.

Yachtsman Greenburg and Homogen Mebane were everywhere on the lookout for Flux Parry.

Flux Parry, looking very thin and wan, searched right and left for flux salesmen.

Frank Ernest Gamble was as pleasant to meet as ever.

Hoyt—the balance wheel. Everybody satisfied.

The Convention Mainspring—Doctor Moldenke—and he informed the public that "President Roosevelt had the honor of appointing him a delegate to the International Testing Convention.

Mrs. Moldenke—the Convention Queen—radiant and beaming, record eleven.

## THE SELLING OF BRASS FOUNDRY REFUSE\*

By JESSE L. JONES.†

Every brass foundry produces certain by-products such as ashes, tailings, skimmings, grindings, turnings, etc. Some foundries try to use certain of their own by-products, but the majority of them have found that it is more economical to sell all such material to the scrap dealer or smelter for the reason that few manufacturing establishments, however large they may be, produce enough of such refuse to warrant the installation of a complete equipment for smelting and refining. Broadly speaking, scrap material may be disposed of in two ways. It may be sold to the scrap metal dealer or it may be shipped to the smelter.

### SELLING TO THE SCRAP METAL DEALER.

By a scrap metal dealer is meant an individual or a firm that has a yard for the storage and sorting of brass refuse, and perhaps also tumblers for washing ashes, etc., magnetic separators for removing iron and a few crucible furnaces for running down turnings and miscellaneous brass castings into ingot brass. Such a firm may also be an agent for the smelter or if not it may act as a middleman between the brass foundry and the smelter, because all low grade material must of necessity ultimately find its way to the smelter. High grade material such as copper turnings, red brass turnings, yellow brass turnings, miscellaneous scrap castings, etc., can usually be run down in crucible furnaces and disposed of advantageously in the ingot form, hence it may never reach the smelter.

When a brass foundry has an accumulation of copper bearing material or other non-ferrous scrap to dispose



JESSE L. JONES.

of, it is customary for its purchasing agent or secretary to send out a circular letter to the nearest scrap metal dealers, stating the number of lots of material that are for sale, the general character of each lot and requesting that prospective buyers call at their earliest convenience, inspect the material and tender their best prices therefor, f. o. b. cars, on or before a given date. Samples may be sent out if the material is standard stock and uniform in quality. As this is seldom the case, buyers are nearly always asked to take their own samples, because this prevents any subsequent claim being set up that the material shipped was not in accordance with the sample.

Every scrap dealer is a law unto himself in the matter of sampling and judging scrap material and every brass foundry is a law unto itself in its manner of grading its waste products. The scrap dealer has to learn the eccentricities of each separate foundry and this information may cost him dearly. As there are no recognized standards of quality for brass ashes, tailings, skimmings, etc., many purchasing agents make persistent efforts to sell refuse that is absolutely worthless. The misguided zeal of sellers and the tendency of the scrap dealers to generalize and judge one foundry by another, leads to frequent misunderstandings and controversies and sometimes an occasional scrap dealer will attempt to safeguard himself in ways that are more ingenious than honest.

One dealer is said to have called at a certain brass foundry for a lot of skimmings and by handing the employee who did the weighing a ten dollar bill, he was given three loads of skimmings and only charged with two loads. The fraud was discovered as a result of an assay of the material which showed that the dealer was

\*Paper read at American Brass Foundrymen's Convention, Detroit, June 6 to 10, 1910.

†Metallurgist Westinghouse Electric and Manufacturing Company, Pittsburgh, Pa.



paying, month by month, more than the skimmings were worth. Another dealer called for skimmings with a wagon that had a large box under the driver's seat. This was filled with sand before entering the brass foundry yard. The wagon was weighed at the entrance, and while driving to the bin where the skimmings were stored, which was a considerable distance from the scales, a plug in the bottom of the box was loosened by means of a string and the sand allowed to run out. In still another instance the foreman of a large brass foundry was noticed taking joy rides with a prominent scrap man, and it was found that when the aforesaid prominent scrap man was the successful bidder for the brass foundry's ashes they assayed over 20 per cent. of copper and in one car a dozen or more ingots of copper were discovered carefully covered up. But when some other dealer was the successful bidder the ashes were hand-picked until they were as lean as the kine of Pharaoh's dream.

The majority of scrap dealers, however, are honest and reliable and when the limitations imposed upon them by competitive bidding are taken into consideration, commercial dealings with them are as a rule satisfactory and there are certain advantages to be noted in dealing with them. The small dealer is generally nearby the foundry

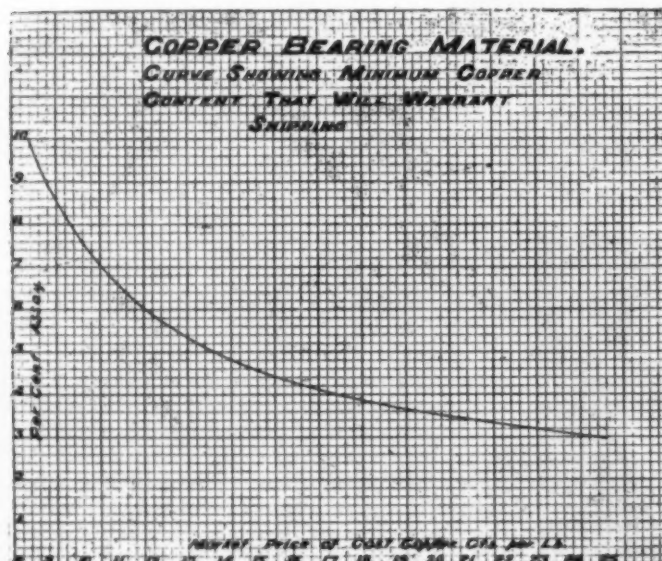


FIG. 1. ASSAY VALUE CURVE OF LOW-GRADE COPPER-BEARING MATERIAL.

and his freight charges are thus eliminated or very low, so that he can make a close bid while at the same time if he calls for the material with a wagon it does not have to be boxed or barreled. Further, he always expects to pay cash and this fact of getting ready money carries a lot of weight with the average purchasing agent.

#### SELLING TO THE SMELTER.

By a smelter is meant a firm that has a complete equipment of water-jacketed copper smelting furnaces, cupolas, reverberatory refining furnaces and whatever else is necessary for the handling of all kinds of low grade and high grade material. The number of these firms is constantly increasing and the advantages of disposing of brass foundry refuse to them are many and the disadvantages are few. The smelter takes all classes of copper bearing scrap and pays for it according to its copper content as determined by sampling and assay. The material may be sampled by the seller before shipping if desired. This need not be done, however, as when the scrap is received by the smelter it is sampled in the customary manner used for ores and three samples taken, one being

turned over to the seller's representative, one taken by the smelter and one sealed and kept as a referee sample. The seller's representative also checks up the weight of the shipment as it is unloaded and he sees that a fair sample is taken in the case of material like long copper turnings mixed with steel turnings, which cannot be sampled by quartering, but has to be sampled by selection.

The buyer's and seller's assays should agree very closely and settlement is made on the split assay, after deducting the smelting charge and freight, plus a nominal deduction of 1.3 per cent. of the copper content. The price used in each transaction is that given for casting copper in the last issue of the Engineering and Mining Journal previous to the date of sale. For high grade material there is no smelting charge.

In Figure No. 1 is shown a curve which gives the minimum assay that a low grade copper bearing material must contain to warrant shipping it. It holds good for material containing not over 10 per cent. of copper. This curve is based on a maximum smelting charge, a rather high freight charge and a high deduction from the market price of copper. The curve shows at a glance the points, dependent on the selling price of copper, where it ceases to pay to ship brass foundry refuse. When it is not profitable to ship such material it may be stored until such time as an advance in the price of copper will warrant its sale. Similar curves may be prepared for material running from 10 to 15 per cent., 15 to 40 per cent., 40 to 50 per cent. of copper and so on. Of course the minimum assay to pay expenses is lowered as freight charges, smelting charges, etc., are reduced and it is possible under favorable conditions to dispose of material running as low as 2 per cent. of copper.

The above outlined plan is a much more satisfactory and legitimate method of arriving at the market value of scrap than the competitive bidding plan. The seller is sure to receive all that his material is worth and the buyer knows that he will make a fair profit so that there is no unusual incentive for either party to resort to any sharp practices. The methods used by the smelters are accepted without question in the sale of ores of copper, lead, zinc, etc., and when better understood will be accepted just as readily by the brass foundries. One of the valuable features of selling by assay is that it emphasizes the importance of careful grading of all scrap material and not allowing low grade material to be mixed with high grade material. Much of the profit of the small scrap dealer comes from buying miscellaneous lots of scrap that are composed partly of high grade and partly of low grade material at a price that approximates the value of the low grade material. He then carefully grades the material that he has bought and thus realizes a fair profit.

In selling on an assay basis the importance of keeping cores and heap sand apart from the skimmings and other material that is washed, is obvious. By so doing, tailings may often be stepped up from 3 or 4 per cent. of copper to 12 or 14 per cent. of copper. By drying the tailings (which may contain as high as 20 per cent. of water) and then storing them under cover their value is further increased. If you ship a 60,000-pound car of tailings which runs 20 per cent. of moisture you will pay freight on six tons of water and if the material dries out en route to its destination you may be suspected of shipping short weight.

There are a few objections that are raised in some quarters to disposing of scrap to the smelter. One is that the small dealer will call for scrap and haul it away without cost to the brass founder, while if he is situated at a distance from the smelter the freight charges may be high. This is offset by the greater net profit that is nearly

always obtained when selling on an assay basis and by the smelter's establishing local collecting points which thus eliminate the freight charges or reduce them materially. The small dealer has to pay cash against bill of lading while in the past the smelters have delayed settlement until all assays have been completed. They are now willing, however, to pay three-quarters of the estimated value of the shipment immediately it is shipped and the remainder promptly on completion of the assay.

Many brass founders are dubious about selling on an assay basis because they are not familiar with the methods of sampling and assaying and the various calculations involved in arriving at the market value of scrap material. If they will devote a little time to the matter, they will find it is not such a formidable undertaking after all and that it will not require many assays to show them exactly what each grade of scrap they produce is worth, provided of course that their manufacturing methods are standard and not subject to frequent changes. On account of the loose and unbusiness-like methods of selling that have prevailed in the past, there is sure to be a steady increase in the number of those who dispose of their wastes on an assay basis. Even the firms that prefer the old methods are safeguarding themselves by having a sufficient number of assays made on all waste products to indicate their value. If the market value of a material is ascertained by having it assayed, competitive bids on it can then be better judged. If they are too high, there may be a "nigger in the wood pile" to be investigated, and if they are too low the scrap can be held over for another month and re-advertised.

As a rule the holding of scrap material until a high market is reached is not advisable. The increased freight charges for small lots justifies waiting until a minimum car load is obtained, but further holding of it is not warranted. The brass founder is not in the scrap metal business and if he loses at one time by selling at stated inter-

vals, he will gain at another and find that it evens up in the long run.

In conclusion we may say that every brass founder will find it to his advantage to get in touch with one or more reliable smelters and become familiar with their methods of doing business on an assay basis. He should also have a competent metallurgical chemist examine his by-products and report on their average copper content and market value.

#### DISCUSSION.

Following the reading of the above paper F. O. Clements, chemist of the National Cash Register Company, Dayton, Ohio, stated that his company had, after extensive investigation, decided to install a smelting and refining plant of their own. He stated that they had an output of six tons per day of copper-bearing material which would be available for treatment in the smelting furnace. His experience in the past had been that results obtained in disposing of their waste material in the manner advocated by Mr. Jones, in his paper, had not always proved satisfactory and therefore they had decided to treat all of this class of material themselves. He was of the opinion that they could make a considerable saving in the course of a year by their own recovery in a refining plant.

F. W. Reidenbach, general manager of the Genesee Metal Company, Rochester, N. Y., remarked that it was a very important and expensive question to determine as to whether a refining plant operated entirely upon the waste material obtained in an industrial concern, would be successful or not, and if they bought material from outside they became competitors of other refineries. He advised that the question be thoroughly gone into from all sides, and from his present point of view he would advise the selling of metal bearing waste rather than installing a private plant unless some unusually favorable conditions were attendant upon the case in question.

### MODERN BRASS FOUNDRY PROGRESS.\*

By CHAS. T. BRAGG.†

It has recently been said to one of our great chemical societies that the twentieth century was to be the era of the chemical engineer, as the nineteenth century was that of the mechanical engineer. Possibly it could have been more properly said that the twentieth century is to be the era of engineers—that is, judging from the progress of events in manufacturing circles in the first ten years of the twentieth century, it would seem that both, from the standpoint of development, and from the standpoint of maintenance of quality, the engineer, no matter of what type he may be, is to be a very prominent figure. Some centuries ago, when the manufacture of brass was first begun, it was not with the end in view of undertaking brass production. It was introduced, purely through accident, in so far as the history of the thing is correct. Mention is made of brass in the Bible. Whether or not the term "brass," as used in the Bible, is merely a word used by the translator to fill the place due to lack of a better word, or whether or not brass was actually made,



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we have no authentic data. We are, however, sure that any brass or bronze that was made in ancient times, was used to serve any purpose that it could, and its discovery was entirely the result of accident, and was not due to any preconceived idea, as the properties or the value of brass itself. This is mentioned in this way as a fore-runner to what is about to be considered.

First of all, it may be said without fear of question or contradiction that never, within authentic history at least, has the standard of quality of manufactured articles, either iron, steel, brass, or any other, been so high. As manufacturing processes and raw materials have advanced from the standpoint of quality, so, in turn, has the demand for articles of high qualities increased. That is to say, with practically every line of business, the manufacturer is setting a standard to which he must adhere. As one process is improved, greater production is expected, and no matter what process is thereafter adopted, the same production or greater is expected. Thereby automatically, unintentionally perhaps, a standard of production is adopted through no definite demand. As quality of raw materials improves, the manufacturer himself is gradu-

\*Paper read at Detroit Convention of American Brass Founders' Association held June 6-10, 1910.

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ally setting standards below which he never again must fall. The whole tendency then of producers of manufactured articles seems to be upward as to both quality and quantity, the standards for which are set by no less interested parties than the manufacturers themselves. It is on that point of setting standards for quality that the success of practically any concern largely depends.

#### PROGRESS OF THE BRASS FOUNDRY.

Much has been said of recent years, and much is still being said regarding the uplift of the brass foundry—not that the brass foundry has been in the Slough of Despond, not that the brass foundry has not progressed, not that its products are not one of the world's most important commodities, not that the brass foundry in itself has not tried to improve both its methods and its products, but that it is now receiving attention from sources foreign to itself. The formation of societies and associations, the publication of carefully edited articles, and the interweaving of the various allied interests have been making the forward strides of the brass foundry much more marked in the past few years.

Much of the progress of the brass industry has been brought about through adverse criticism. Naturally no processes can be developed and no new materials brought forward, unless something teaches that the old are not efficient. This again shows that nothing is produced which is not demanded, and nothing is demanded which cannot be produced. Thus, hand in hand, the consumer with the manufacturer has been improving brass foundry conditions. It is well, however, to pause and consider that every criticism that is made of brass and bronze foundrymen is not necessarily an adverse one. Manufacturers of foundry appliances will doubtless testify that they are meeting, in all parts of the country, hearty co-operation for the development of their various machines—not so much because the brass foundryman is so anxious to see the supply man succeed, as because he knows that on the successful development of brass foundry appliances depends the future improvement of those appliances, and consequently the improvement of his own art.

To take a case in point, every foundryman knows now that the model brass melting furnace has never been produced. He also knows, moreover, that through his own suggestions and requirements only will it ever be produced. In other words, just as the demand for more improved and better furnaces for the melting of brass are brought forth, in just that ratio are those furnaces likely to be improved. As an illustration of that, the most

progressive brass men are now anticipating the advent of the electric furnace, not that a successful electric furnace for melting brass has not yet been devised, and not that within the next few years it may be devised, but that they know that only a demand for it is likely to produce it. Considered from all standpoints, in all of its phases, metallurgical and mechanical, it is known that brass is now being melted under conditions which are not conducive to the best results in any type of furnace. To take another illustration, this one from the standpoint of the operation of the brass foundry, the manufacture of brasses and bronzes of standard compositions and properties is becoming important. Only the instigation and continuance of this system by foundrymen is promoting the demand for its results.

In order to put the brass and bronze industry on the basis of excellence that has been attained by the iron and steel industries, the same interest must be manifested and the same type of individuals must become interested. Without a question, the last few years has seen the entrance of many scientific men, and the next few will see the entrance of many more. These men, who have come not to destroy but to aid the brass foundryman, have been attracted not purely through scientific interests, but largely because of the inclinations of foundrymen, and because of the demands from an engineering standpoint that are being brought to bear on non-ferrous alloys. This is approaching now one of the vital points which is perhaps receiving as much attention as any other from brass foundrymen, that of chemical control of the brass foundry. The chemical engineer, with his laboratory, his microscope and his testing machines is doing, and will do, some remarkable things. The development and the maintenance of standards of quality is perhaps more easily and more completely carried out by the chemical engineer than by any other means, and the whole tendency in the manufacture of non-ferrous alloys is toward recognition of this fact.

It may be said now that from the scientific standpoint, and necessarily from the business standpoint, the brass foundry is moving rapidly forward. Great masses of data of various kinds are being accumulated on every hand, and are gradually being correlated and combined to put the art on a much higher plane. Just as fast as the brass foundryman grasps the situation and appreciates the fact that all effort toward the improvement of his industry is quite important unto himself; just as rapidly as he realizes, as he is now doing, that the status of the brass world to the progressive world in general is his interest, in just that measure is he sufficient unto himself.

## THE ANALYSIS OF BRASS.

A DETAILED DESCRIPTION OF THE METHODS EMPLOYED FOR THE DETERMINATION OF THE CONSTITUENT COMPOSITION OF BRASS MIXTURES.

BY ALBERT J. HALL.\*

(Concluded from May.)

#### ZINC DETERMINATION BY ELECTROLYSIS.

Take 50 c.c. of the solution from the lead filtrate and dilute it to about 125 c.c. in a 150 non-lipped beaker. Plate out the copper on an unweighed platinum cathode without the addition of any acids or chemicals, and with the same current condition as in the regular copper determination. The sole object is to get rid of the copper without the use of nitric acid or ammonium nitrate. The plating will be dark red and spongy, but the precipita-

tion will be complete and the deposit adherent enough to be washed without causing any of the deposit to fall back into the solution again. When the copper has completely precipitated, wash and remove the cathode and transfer the liquid to a tall non-lipped 250 c.c. beaker. Dissolve seven grams of solid C.P. sodium hydroxide in the liquid and then cool to room temperature. Plate out the zinc using a current N.D. 100 equal to about 2-3 amperes for each cell. The pressure is usually about 6-7 volts. Plate the zinc over the copper-plated cathodes as weighed up in the regular copper determination. Silver-plated cathodes

\*Metallurgist Michigan Smelting and Refining Company, Detroit, Mich.



may be used instead of copper-plated ones, but zinc should never be plated over platinum for platinum black will form which is very hard to remove and which materially diminishes the weight of the cathodes.

Have all the electric connection made and some current on, so that the plating starts immediately after the cathode touches the liquid. Rotate the anode about 500 times per minute. The deposition of zinc will be complete in about 20 to 30 minutes. Test the solution for zinc by removing a small quantity of liquid, acidifying it with sulphuric acid and then adding a few drops of a solution of potassium ferrocyanide. Zinc produces a cloudiness in a very short time. When the zinc is completely precipitated, remove the cathode without reduction of current, using the same precautions as used in the copper determination. Wash the cathode in alcohol and dry cautiously in an oven or over an open flame. Zinc is easily volatilized. Do not ignite the alcohol. Why dry cool and weigh as metallic zinc. Calculate the per cent. of zinc present in the original sample. The deposit, if a good one, will be hard, adherent and light or steel gray in color.

#### IRON DETERMINATION.

Iron is determined in two different portions of the assay, viz: in the tin oxide precipitate and in the lead filtrate or main solution.

#### IRON IN THE TIN PRECIPITATE.

After igniting to stannic oxide on the porcelain crucible, add 2 grams of flux, composed of four parts sodium carbonate and 1 part sublimed flowers of sulphur. Mix thoroughly and fuse at a moderately low temperature. When the excess of sulphur is burned off, cool the crucible somewhat and then put it into a 100 c.c. beaker containing about 50-60 c.c. of hot water. Heat until the melt is disintegrated. Remove the crucible. The solution will invariably be dark green in color due to dissolved iron. This can be precipitated by adding enough ammonium chloride to leave the liquid a light yellow, or a light red color. Too much ammonium chloride will cause the solution to turn dark red and muddy. Allow the precipitate to settle; then filter and wash with hydrogen sulphide water. Dissolve the iron sulphide from the filter preferably by a hot 1-1 hydrochloric acid. All the precipitate will not dissolve for it contains sulphur and tin sulphide. Strong acid usually causes a brick red precipitate to run through the filter which causes annoyance further on. Heat the solution. Reduce the iron with stannous chloride solution and after cooling add 30 c.c. mercuric chloride solution. Pour this into a dish containing 500 to 600 c.c. water and 30 c.c. of a guard solution, and titrate the iron at once with a weak solution of potassium permanganate. Calculate the per cent of iron present.

#### IRON IN THE MAIN SOLUTION.

Take 250 c.c. of solution from the lead filtrate. Transfer to a 400 c.c. beaker. Heat to boiling and precipitate the iron with ammonia. Cover and keep the liquid at just the boiling point for one hour or more, but do not boil. At the end of that period, the iron will have collected in the bottom of the breaker. Filter it off and wash thoroughly with hot water. Dissolve the precipitate with hot hydrochloric acid, reduce the iron with stannous chloride and titrate as described in the first portion. Calculate the per cent of iron present. To eliminate possible sources of error, it is best to standardize the permanganate solution by the same method by which the iron is to be determined.

#### MERCURIC CHLORIDE SOLUTIONS.

Dissolve 50 grams of salt in one liter of water. Filter if necessary.

#### GUARD SOLUTION.

Dissolve 200 grams crystallized manganous sulphate in one liter of water. Add a few drops of sulphuric acid and filter if necessary. Add to this one liter of phosphoric acid sp. gr. 1.3, 600 c.c. of water and 400 c.c. of sulphuric acid.

#### ANTIMONY DETERMINATION.

Take a five gram sample of brass. Dissolve in 30 c.c. nitric acid 1.20 sp. gr. If the brass is low in tin, add some pure tin, otherwise the antimony will not be completely precipitated. Evaporate the solution to about 10-12 c.c. and then dilute with hot water to 350 c.c. in a 500 c.c. Erlenmeyer flask. Boil for 15-20 minutes and then allow the precipitate to settle with the flask at an angle of 45 degs. The solution should settle out well. If it does, carefully decant as much of the solution as possible but do not lose any of the precipitate. If the precipitate does not settle out well, decant through a Gooch crucible and then return the precipitate and asbestos to the flask. If much copper is present, it is advisable to add more hot water and allow to settle; then decant again. The object is to get rid of most of the copper. Add 15 c.c. of sulphuric acid sp. gr. 1.84 and 4-5 grams of potassium sulphate to the flask and evaporate to white fumes. Do not drive off all free sulphuric acid so that the melt gets hard on cooling. Then add  $\frac{1}{2}$  gram of powdered tartaric acid. Heat strongly until the solution gets light colored or until all the carbon is oxidized. This treatment leaves the antimony in the proper condition for titration. Cool, add 50 c.c. water and 10 c.c. hydrochloric acid, sp. gr. 1.20 and heat to solution of all that is soluble. Cool very thoroughly. Add 110 c.c. more water and 10 c.c. more acid. Cool again and then titrate at once with potassium permanganate solution. Just before reaching the end point, the solution becomes perfectly colorless, so add the solution rapidly until this condition is reached. The end point is distinct but it fades very rapidly, so do not add more permanganate.

The standard permanganate solution should be standardized by C.P. antimony, then the personal error in the end point will be the same as in the regular determination thus eliminating the error in readings. Calculate the per cent. of antimony present. Multiply the weight of antimony present in a 2.5 gram sample by 1.2658 and subtract the result from the combined weights of  $\text{SnO}_2$  and  $\text{Sb}_2\text{O}_3$ . The difference multiplied by .7881 equals tin.

#### STANDARDIZATION OF PERMANGANATE SOLUTION BY ANTIMONY.

The method used is that of Low and is carried out as follows: Take 0.1000 grams C.P. antimony and an equal quantity of C.P. tin. Put in a 500 c.c. Erlenmeyer flask and add 10 c.c. of sulphuric acid sp. gr. 1.84, and 3-4 grams of potassium sulphate. Heat until the metals are in solution or entirely decomposed and all separated sulphur boiled off. Do not drive off enough sulphuric acid to cause the melt to get hard on cooling. Cool; add 50 c.c. water and 10 c.c. hydrochloric acid sp. gr. 1.20 and heat to get as much in solution as possible. Cool the solution very thoroughly, then add 110 c.c. more water and 10 c.c. more hydrochloric acid. Cool again and titrate at once to a pink color with potassium permanganate solution. From the readings obtained, the value of the solution in terms of antimony can be calculated.

# A SIMPLE METHOD OF REGULATING ANODE SURFACE IN PLATING BATHS.

By CHARLES H. PROCTOR.

For a number of years I have realized that a simple method of cutting out anode surface without the necessity of removing the anodes from the bath or the use of a complicated system of special electrical arrangements would be appreciated. Acting upon this thought I believe I have simplified a method that can be used upon all baths that are used in large manipulations, especially so where the cathode surface varies materially.

It is a well-known fact that most solutions either oxidize or corrode the surface of polished metals, when the articles are placed in the solution without being at once placed in circuit; this is especially noticeable in a nickel solution when plating brass or bronze alloys, and is frequently the cause of unsatisfactory deposits on account of peeling or discolorations of the deposited surface that causes a dull appearance of the finish under reflected light.

It is also difficult to reduce the electric current sufficiently to prevent burning of the deposit when loading the tank, especially when the work is being cleaned and the tank loaded at the same time. It is customary to use "stop offs" in the shape of strips of metal of sufficient width and length. For this purpose the



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work or the full capacity of the bath without much difficulty or effort, and enable the workman to give due attention to the necessary cleaning without undue haste.

The anode rods on the regular plating bath now in use are continuous, and the anodes are supported thereon. This method causes the positive current to flow through all the anodes in use. It is therefore impossible without a special system to eliminate any of the anodes from use, unless removed from the tank.

The method by which I propose to overcome this difficulty and obtain the result before enumerated is to arrange the anode rods as follows; each anode will be supported upon an individual rod of the customary dimensions,  $\frac{1}{2}$ ,  $\frac{3}{8}$ ,  $\frac{3}{4}$  or 1 in. in diameter, of sufficient length to support the anode with hooks. These individual anode rods will be supported on brackets upon the edge of the tank; these can be made from hard wood as is oftentimes customary or any other insulating material. These brackets should be made with a subdivision so that each individual rod can be supported with a thickness of  $\frac{1}{2}$  in. of wood or other insulating material between each rod to prevent con-

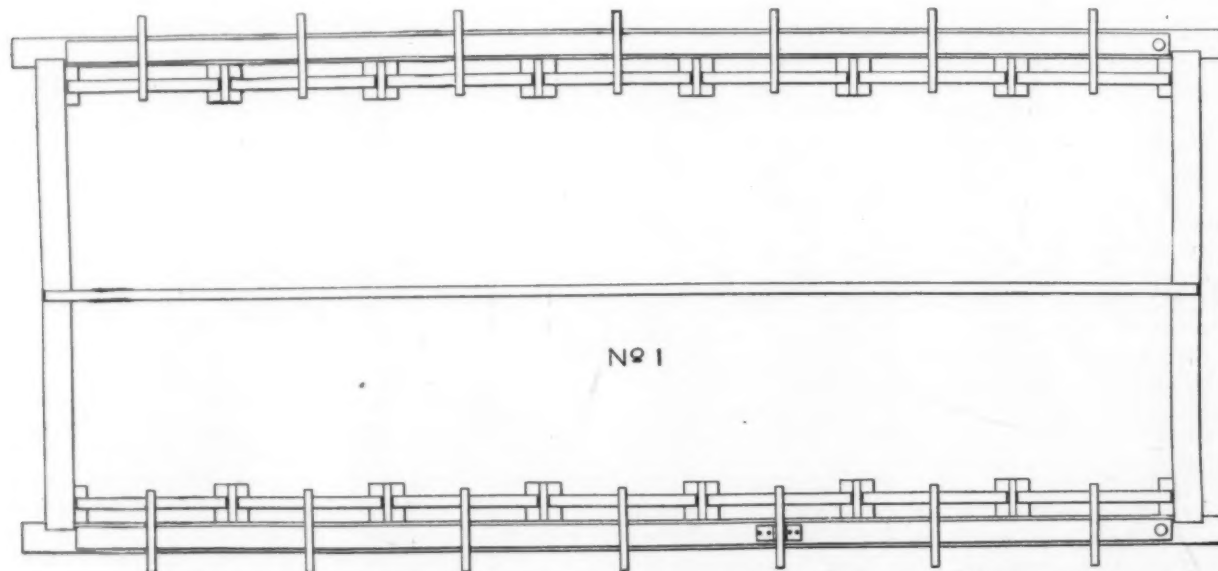


FIG. 1. PLAN OF TANK WITH RODS, BRACKETS AND LEVERS IN POSITION.

strips are placed on either side of the articles until the tank is loaded to prevent burning. This causes a needless waste of metal, and also unnecessary haste, which is frequently the cause of unsatisfactory deposits, owing to the rapidity needed in cleaning the articles and loading the bath. To prevent the troubles enumerated, with the simple method proposed all the anodes can be placed out of circuit, and any number of anodes can be placed in, according to the amount of surface required.

This insures the proper regulation of the anode surface in proportion to the cathode surface and I believe will prove of much value on this account. It will enable the operator to plate a small amount of

tact with each other. Excepting the brackets on the end of the tanks, each bracket will support two of the anode rods, with the subdivision mentioned to prevent the ends of the individual rods coming in contact with each other.

On each anode rod a lever should be placed, not less than 6 ins. long,  $\frac{3}{4}$  in. in width, and  $\frac{3}{8}$  in. in thickness; on the end attached to the anode rod the thickness would be 1 in., made round in a collar formation, and drilled the diameter of the anode rod, and then fastened between the anode hooks with a  $\frac{1}{2}$  in. steel set screw. This will act as a lever to connect with the positive current when placing the anode in circuit. This method also changes the position of the anode carrying



rod, so that by friction a clean contact surface is always maintained beneath the anode hooks. Each anode should be arranged as mentioned. On tanks carrying 2, 3 or 5 anode rods the same method of arranging the individual anode rods must be pursued.

dividual anode rods supporting brackets and buss bar with levers in position.

Fig. 2 shows the elevation of the tank with one contact on buss bar.

Fig. 3 shows cross section of the tank with anode

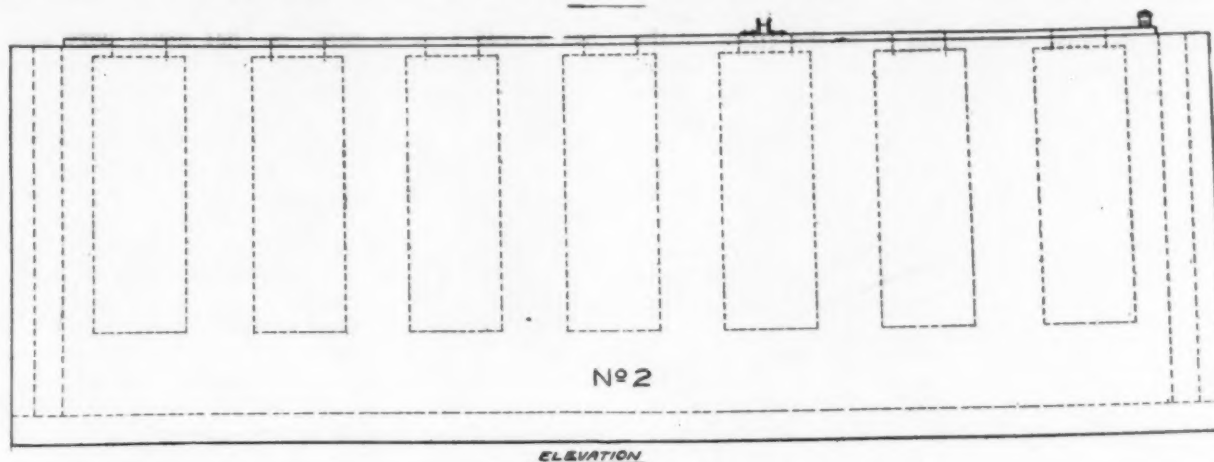


FIG. 2. SHOWING TANK WITH ONE CONTACT ON BUSS BAR.

On the outer edge of the tank a copper buss bar of sufficient current capacity should be placed. This should be not less than  $1\frac{1}{4}$  in. wide and  $\frac{3}{8}$  in. thick. Opposite each individual anode a spring contact should be placed and secured strongly to the buss bar. This can be of the customary knife switch contact so much

rod lever and contact on buss bar also supporting bracket, and shows the lever radius or arc.

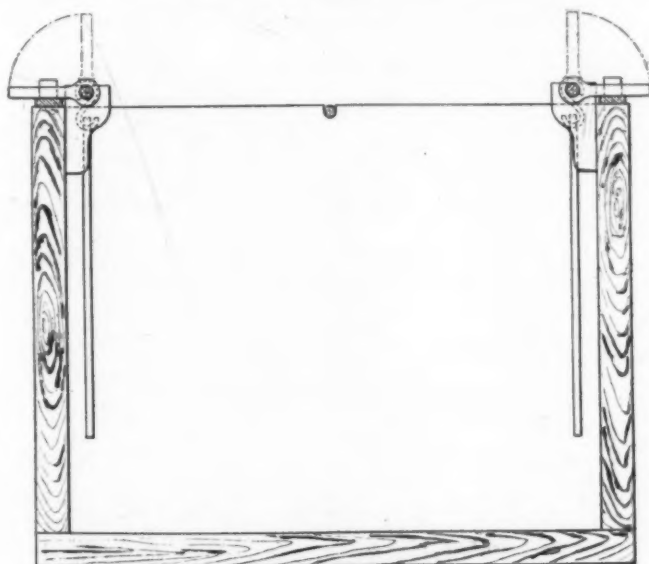


FIG. 3. CROSS SECTION SHOWING LEVER RADIUS.

in use on the regular cut-out switches. These should be made from phosphor bronze. After these arrangements have been made and the buss bar secured to the tank it should be coated with one or two coats of asphaltum varnish to prevent corrosion, excepting the contact for the lever. The buss bar should have a necessary pole connection to connect with the positive current.

It can be readily seen that by this method, by turning the lever over, and connecting with the spring contact, as many anodes can be thrown in circuit as required according to the amount of surface necessary. The accompanying detail drawings will enable a better understanding of the method.

Fig. 1 shows the general plan of the tank, with in-

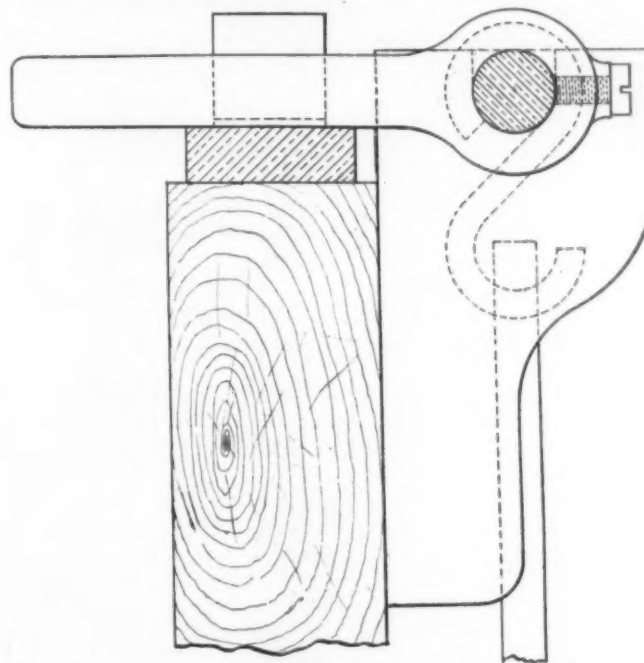


FIG. 4. FULL SIZE VIEW OF LEVER WITH SET SCREW.

Fig. 4 shows lever full size with set screw.

Fig. 5 shows contact full size.

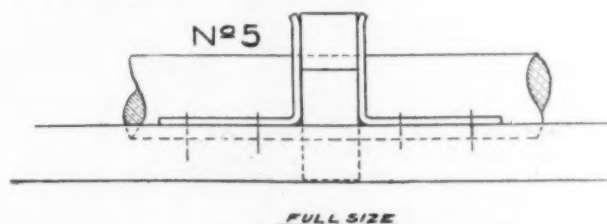


FIG. 5. SHOWING CONTACT FULL SIZE.

Fig. 6 shows dimensions of supporting bracket with intersection between rods for insulation.

Fig. 7 shows anode rod in position with intersection.

## THE DIMINISHING RETURNS IN THE BRASS ROLLING BUSINESS.

By ROLLING MILL MAN.

It is interesting to survey in point of profit the conditions surrounding the manufacture of brass in the several forms of sheets, wire, rods and brazed tubes, which are such as to cause speculation as to the effect on the future of small mills operating six to ten pairs of rolls. Business there is aplenty, just now, but at such narrow margins that capital would seem to be unfairly recompensed. One will look in vain for an industry calling for the ability and capital (the latter, one thing is to be remembered on a 14c. copper market and quite another on a 25c.) yielding scantier returns. That the line is with its multifarious alloys and complaints difficult to handle is conceded; specifications covering greater accuracy in rolling and quality of metal for particular purposes constantly becoming more exacting.

The business would seem to be fairly into a state demanding production in very large volume, calling for every facility in the way of improved equipment and utmost vigilance looking to keeping down cost of manufacture. A pace has been set and it remains to be seen if all can maintain it. That to do so successfully depends on physical equipment of mill and ability and experience of management to say nothing of strong financial position, goes without saying.

Other branches of manufacture expanding under wider demand as the country has developed, have passed through a similar period resulting in concentrating in the hands of a few, having strength and resources, products, the making of which, heretofore, were scattered among many. Who would attempt today the manufacture of pig iron on a small scale? Yet a limited output afforded in its time attractive profits.

The past ten years have seen the addition of four mills operated by independent organizations, a greater number doubtless than in any other decade in the history of the business. This influx inevitably was destined to bring in its train lower prices and at a time of rapidly increasing cost of manufacture. It only required the two years of greatly lessened demand following the October, 1907, financial panic to make worse a price situation already badly demoralized. The aftermath of this state of affairs is the difficulty of raising prices once already down, permanently lower prices doubtless having come to stay. Of course greater efficiency of organization and improved methods of manufacture have aided in reducing cost; moreover, relief has been afforded in a large measure by a material increase in volume of business, lessening cost by virtue of greater production over which to distribute fixed charges and the like.

Apparently the mills deriving the greatest returns on investment are those that have developed specialties and otherwise have favorable business secured and retained only by trained organizations and methods insuring uniformity of product. Few have reached this refinement of manufacture; some seemingly not caring to do so, confining themselves rather to the common run of business, less exacting. The latter class of product it is safe to say, has suffered most in price, due in all likelihood to excessive competition incidental to a type of buyer changing his source of supply for an  $\frac{1}{8}$ c. to  $\frac{1}{2}$ c. reduction, quite overlooking, mayhaps, that belated delivery and oftentimes inferior quality may cost him in other directions more than the supposed saving.

Probably no mill, no matter how favorable the char-

acter of business, how low the overhead charges or how much manufacture is slighted in such ways as faulty or no overhauling and indifferent inspection, has a cost f. o. b. cars, on flat-metal wire and rods of less than  $2\frac{3}{4}$  to 3c., or even over, including every expense whatsoever, dependent on run of work. Notwithstanding, we hear of contracts being freely made on a basis of  $2\frac{1}{2}$  to  $2\frac{3}{4}$ c., with freight allowance oftentimes of another  $\frac{1}{4}$ c. Unless the business carries "Extras" or a favorable arrangement for return of scrap is entered into, a direct loss necessarily ensues on business booked at these figures. Much "Base" business being accepted, "Extras" can hardly be relied on to support the entire price structure.

The practice of selling wire and rods at a level price with sheet brass, begun some months ago, also makes narrower margins already dragging on bottom. This action sacrificed a  $\frac{1}{4}$ c. in the way of an "Extra" never again in all probability to be regained. For some time a few manufacturers had disregarded this differential, arguing, doubtless, that the cost was same as flat metal, and now the abolition of the advance altogether is seen. Other "Extras," too, for gauge and width oftentimes are thrown overboard. Any mill experiencing difficulty in marketing its goods at even prices because of slow shipments or reputation for indifferent quality hardly has the chance under current prices to name lower prices and still get the business at a profit. The day for this seems to be over, as further reductions bid fair to sweep away any real profit which may now remain.

That any mill not as yet fairly established has confronting it the prospect of booking business at cost or less in order to obtain work can but be conceded by all familiar with the situation. Such can hardly claim superior goods or quicker shipments, leaving the alternative of taking business at reduction in order to secure it.

The year nineteen hundred six in all likelihood showed the greatest profits in recent years, probably greatest in any year, brought about by a rapidly advancing metal market, permitting of profit in sale of copper and spelter in form of brass over and above their cost as separate metals, irrespective of manufacturing margin. In other words, mixtures sold above cost because of quick price advances. Indeed, this profit for the year mentioned one might easily believe would enable the management of a mill making, let us say, no profit whatever in what is essentially manufacturing, to go before its stockholders with a statement showing highly satisfactory earnings, derived from merely buying and selling metals. A fixed metal market for a year or two would leave bare this manufacturing margin and possibly surprise some managements.

In order to show whether he is a good merchant or speculator, as you please, the brass manufacturer should keep two accounts: one to which all raw materials (metals) may be charged and credited with the several metals in mixtures cast, at prices sold in form of brass; the other to show only manufacturing margins, i. e., selling differentials above mixtures, against which should be set up all manufacturing costs, such as labor, supplies, overhead charges, etc.; not forgetting value of shrinkage in weight in operations of casting, pickling and annealing, as well as depreciation on equipment.



Under such conditions as ruled in 1906, the first account for that year might be expected to show a profit which in part or wholly would have become dissipated in the rapidly declining market of the ensuing year. Over a period of years this account in all probability would show, if the management endeavored to buy in keeping with its sales, neither a loss or gain. If the second account under present conditions were to show a profit equal to  $\frac{1}{2}$ c. on shipments, the manufacturer has reason to congratulate himself.

That such returns are inadequate a moment's reflection will show; as an investment of a million dollars, approximately, half for working capital and half for plant, is called for in order to produce 10,000,000 lbs. of manufactured brass annually; therefore returns of 5% may be expected in case no money is lost in buying copper or spelter, and excessive bad debts are escaped. This output, with metals at present prices, reflects, it will be seen, a profit of about 3% on sales of say \$1,500,000, permitting of a manufacturer turning over his capital only one and a half times per year. Were metals to rise 25 to 50% in value these small returns would of course be affected adversely, unless by reason of a heightened demand better margins ensued.

As is well known, some managements have seen fit under existing strenuous competition to reduce copper content of certain of their alloys, thereby, of course, cheapening mixtures. And maybe, where the use of the metal in the hands of customers is well understood, the mill can do this successfully to a degree, but the practice imposes penalties, such as creating a greater number of mixtures to manipulate in the mill, increasing

greatly the hazard of not arriving at desired mixtures because of variety of scrap always subject to mistakes in handling in any mill, to say nothing of the importance of ever-present danger of the metal not satisfactorily answering the purpose of customer, with resulting rejection and loss of trade. Whether or no this policy, all things considered, has its advantages, it is certain that the line of safety in tampering with mixtures may be pressed too closely from the standpoint of reputation. And who knows if the day won't come when customers buying on the Waterbury average or "Copper" contract won't insist that the mixture be calculated, not on a 2 and 1 basis, as such contracts usually read, but on Copper content as shown by chemical analysis?

In years gone by refuge has been sought under such conditions as now obtain by the formation of pools and agreements looking to artificially supporting price, but these trade-devices are hardly in the face of public opinion to be resorted to. Then, too, experience has shown that the weak prosper at the expense of the strong, under such selling plan; some mills doubtless owing their existence today to such fostering, carrying objections to all but those most in need of help. Why should those in an impregnable position by virtue of equipment and capital build up the business of competitors? Looking ahead, the situation would seem to be purely a question of the survival of the fittest with the load bearing most heavily on mills that may have antiquated equipment or without sustaining departments offering greater margins.

Meantime, as the line affords such scant returns to capital, what chance has the small mill for healthy growth or even indefinitely continued existence?

## A MODERN TESTING LABORATORY AND ITS FUNCTIONS IN THE INDUSTRIAL WORLD.

A DESCRIPTION OF THE TEST DEPARTMENT OF THE NATIONAL CASH REGISTER COMPANY, DAYTON, OHIO.

By F. O. CLEMENTS.\*

The only substantial and fundamentally correct method of marketing any product is to found the entire business on quality and back the same with a specific guarantee. This is undoubtedly the attitude taken by every high grade industrial concern in America. To do this with the highest degree of success requires elimination of all guess work with reference to both raw stock and manufacturing processes, so that uniformity in materials as well as the utmost possible certainty in shop practice will be the result. Consequently, the one thing worth while in any business is knowledge, and lack of the same has spelled defeat in many cases or human endeavor. Since the premise that "Knowledge is power" must pass without dispute, we would venture another that "Science is knowledge at its best." If such be true, we would expect to find the industrial plants as well as nations that look upon scientific attainment as a necessary adjunct to business, ranking in the forefront in the race for commercial supremacy.



F. O. CLEMENTS.

Our steel, oil, pharmaceutical and packing house industries and railroad interests are striking examples of administrative ability that early formed definite and positive conceptions of the scope and possibilities for usefulness of modern chemistry. No more effective agent exists for standardizing materials and processes and minimizing waste than thorough knowledge of underlying conditions, disseminated throughout a plant by means of a wide awake laboratory. For "Publicity corrects all abuses." Germany, today, presents herself as our national standard of comparison, and her commercial progress has actually astounded the entire world. And thus we would account for the rapid increase

in the application of chemical engineering to industry; for science grows upon what it accomplishes and every new acquisition of knowledge opens doors in many unthought directions.

The Department of Tests of The National Cash Register Company has at its disposal four rooms, divided by glass partitions and a vault for storage of chemicals and supplies. The physical laboratory is widely separated from

\*Chemist National Cash Register Company, Dayton, Ohio.

the chemical laboratory by two rooms, one comprising the office, museum and store room for standard samples, and the other entirely shut in and, consequently, free from drafts, used for delicate measurements, electrolytic work, calorimeter determinations and as a balance and reading room.

This company purchases over 7,000 different raw materials and many of them reach this department on each and every regular shipment, while some of the less consequential ones are checked periodically. All samples are selected by the raw stock inspection department and

- (1) By stopping losses.
- (2) By stopping mistakes.
- (3) By bettering products and processes, thereby securing greater uniformity and certainty in all manufacturing operations.
- (4) By increasing profits.
- (5) By making the purchasing power of the concern's dollar the full equivalent of any other concern's dollar.

#### STOPPING LOSSES.

In the economy of nature, nothing is lost. It is only



NATIONAL CASH REGISTER COMPANY TEST DEPARTMENT, PHYSICAL LABORATORY.

are accompanied by a "write-up" giving all identification data. The "write-up" and the sample are at once consecutively numbered and placed on the office blackboard until tests are completed and reports made. Furthermore each member of the staff has an individual blackboard, which gives at a glance the work ahead of him and its relative importance.

The equipment of the physical laboratory comprises a 100,000 pound automatic and autographic testing machine of the Riehle type, several hand power machines for light materials, a cement tester and a number of specially designed machines largely applicable to the business, such as spring and wire outfits, file and hack saw blade machinery, etc. We also frequently use both the Shore Scleroscope and the Brinell Ball method for determining hardness of construction materials.

The chemical laboratory equipment is extremely diversified and very complete, comprising a specially designed switchboard for electrolytic assay of metals, a Hempel calorimeter, for the heating power of coal, a Le Chatelier pyrometer, a fine microscope of high power and many instruments of precision carrying both German and American certification. In fact the facilities are such as are usually found in any well equipped laboratory. Such departments applied to industrial concerns benefit as follows:

when man steps in that losses due to waste and the usual by-products of manufacturing accumulate.

The immense amount of raw materials that any large industrial concern purchases, factory operations and finished products, are more or less subjects of common knowledge and interest to all factory men, while few realize the enormous extent of waste products that accumulate during manufacturing. Standardizing the purchased material by means of specifications and checking the same regularly permits definite statements and positive guarantees to be made concerning waste products, that with us have resulted in higher prices for the same. For instance, probably 50 per cent. of all strip steel purchased by concerns similar to our own winds up as scrap in the form of steel skeleton. A thorough knowledge of composition, keeping the phosphorus and sulphur within the customary limits for high-grade open hearth steel, will permit the disposition of such scrap material to much better advantage than would be the case if this knowledge did not exist.

Concerns that sell their brass and bronze borings, grindings, buffings and similar materials can always do better on the basis of actual values determined by analysis, especially if their dealings be carried on with a reputable smelting company. The elimination or reduction of these, and many similar losses that attend every step of



the raw materials towards the finished product in any and every manufacturing concern, will have much to do with the solution of the big question of conservation of national resources, a question of more than passing interest to all good Americans. Again many materials thrown away are often subject to reclamation and useful service. Still again, losses due to accidents, misbranding or mixup of materials in raw stock bins can largely be prevented by intelligent supervision and checking of supplies.

Every manufacturing plant maintains an inspection department, but surface inspection is very superficial unless more accurate information concerning the makeup of the material itself be included therewith. A combination of the two is of the utmost value to any concern. Thus, a testing laboratory at once becomes an economical expense and in time an economical necessity.

#### STOPPING MISTAKES.

"One test is worth 1,000 guesses." Mistakes, detri-

is being furnished, and we also harden a sample from the shipment to find faults and flaws, such as pipes, seams, etc., as well as to determine beforehand that the steel has a good hardening capacity. This is worth while, in that it prevents expenditure of labor of high priced tool makers on a piece of steel that is faulty to begin with. It should always be remembered that the price of brains far exceeds the price of material. Consequently any practice that adds even to a slight degree to the efficiency or certainty of a manufacturing process is a step forward, and counts largely in increased efficiency.

It would be impossible for an up-to-date testing laboratory to perform its functions satisfactorily without a testing machine; and such a machine will be in constant use in checking all steel and alloys produced or purchased. Without doubt such a machine is a necessity to any large consumer, and helps to rule out mistakes and guesses prior to the acceptance of the purchased material. Light construction material calls for as much definite information as to strength of parts as bridge work or railroad



NATIONAL CASH REGISTER COMPANY TEST DEPARTMENT, CHEMICAL LABORATORY.

mental to economical manufacturing, will always occur no matter how efficient the organization. These may comprise the selection of materials not entirely suited for the purpose to which they may be put. The training and education of the entire force with reference to the products that pass through their hands, always produces a more discriminating attitude of mind. This is especially conducive to good suggestions and a wide awake attitude of those receiving such reports. Again, unavoidable mistakes occur, embracing many manufacturing operations, only to find that the last operation, possibly a hardening one, shows the material absolutely wrong in composition, and all previous work goes for naught.

This laboratory even checks all shipments of tool steel as received, satisfying ourselves that high-grade material

building, and the operator can devise many a clever test, which not only gives the strength of the individual part but often times permits improvements in shop practice, resulting in greater output. The finished product several thousand miles away makes a sorry test department. Consequently, our aim is to inspect and test materials prior to their acceptance, so that the highest degree of certainty will be met with in all manufacturing operations and a greater margin of safety conferred on all our register parts.

#### BETTERING PRODUCTS AND PROCESSES.

Regular routine checking of all supplies secures for The National Cash Register Company:

- (1) An atmosphere clarified as to our own needs and

the tabulating of the maximum variations allowable. This includes the formation of positive and definite standards, of value to any manufacturing establishment.

(2) Uniform material best suited to service requirements.

(3) A stimulus to the manufacturer furnishing our supplies to continually produce better products.

(4) Opportunity to convince the producer that nothing but honest goods will pass muster, and in this same connection protecting the honest producer against unfair bids based on faulty or adulterated material.

(5) Wiping out of ignorance, prejudice and disregard of the many factors that enter into industrial supremacy.

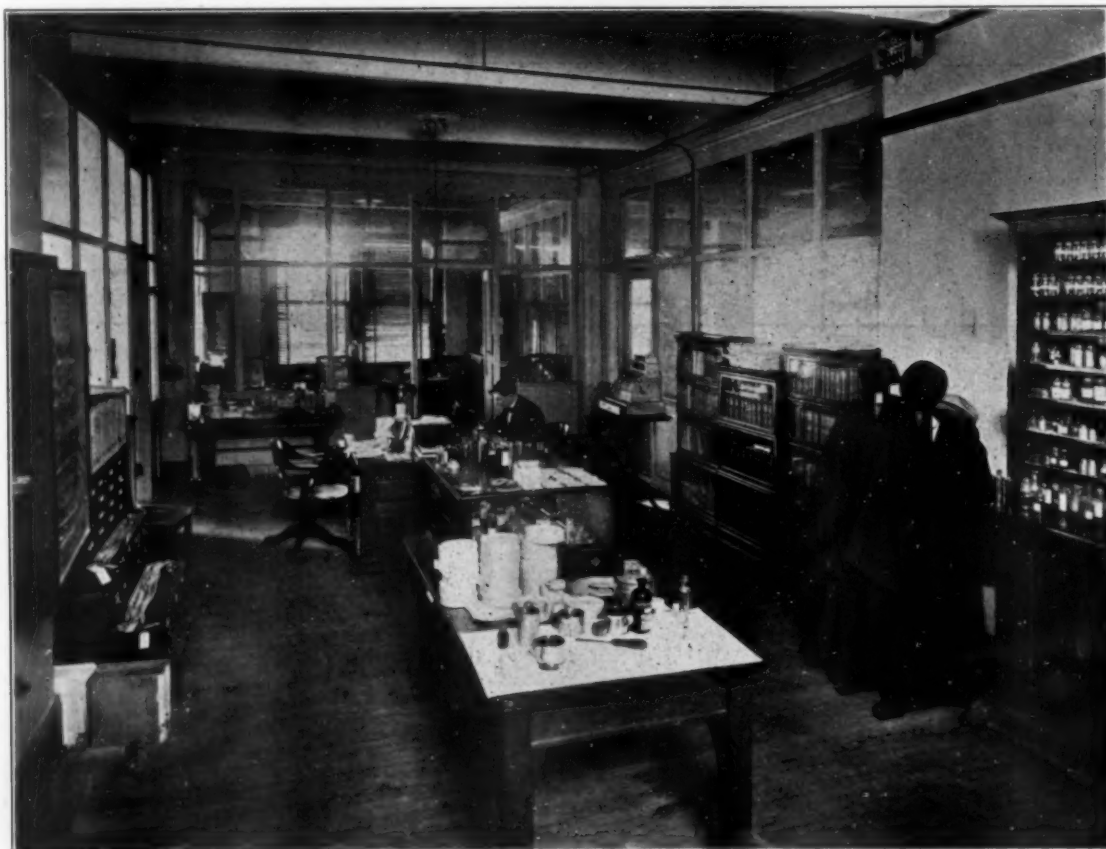
(6) Better knowledge of our own business in its underlying principles. Working up new processes, applying new ideas as well as standardizing and studying old processes, form a portion of our daily work.

This big hustling world is moving very rapidly these

to our business. For instance, we use large quantities of a special ink intended for check printing machines. The functions of this ink are so important that we consider our interest in the matter to be paramount and worthy of continual study as to means of betterment. We can cite to savings totaling thousands per year on single articles; all brought to pass by better knowledge of our requirements and what the market affords. Furthermore, we know of two first-class industrial concerns that could make savings of from \$5,000 to \$10,000 yearly on single purchased articles if they only knew their weaknesses and how to correct them. Money saved helps pay dividends.

#### STANDARDIZING THE NATIONAL CASH REGISTER DOLLAR.

Honesty has been greatly popularized by the revelations of astounding adulterations brought to the attention of Congress, which finally resulted in the passage of the



NATIONAL CASH REGISTER COMPANY TEST DEPARTMENT, THE OFFICE AND BALANCE ROOM.

days, and every concern must be very wide awake to keep fully abreast of the times, accepting and applying all advanced ideas as soon as their merits are fully determined. Such work naturally belongs to a department of this nature.

#### INCREASING PROFITS.

A modern laboratory that cannot show a saving over and beyond cost of operation is surely not living up to its opportunities. Many purchased commodities are specialties, commanding exorbitant prices. A study of their properties as well as shop necessities always allows competition which results in reduction in price. Our organization includes a small manufacturing laboratory, the entire aim and function of which is to utilize our waste products in serviceable form as well as in the production of some articles of special value and importance

Pure Food and Drug bill. Misbranding, adulterating and substitution are not confined to food and drug products alone, and the throwing of the light of publicity on poor quality materials, protects the honest producer and constitutes a portion of our claims for existence.

The laboratory also operates in conjunction with a materials committee, whose chief duties consist in enlarging sources of supply. The determination by impartial tests that contracts are being fulfilled and that inferior products are not being substituted at the price of a better one, affords this company and every concern needed protection. The work of the department is designed to be thoroughly practical in every respect, and capable of conserving our interests to the utmost. It is a premise beyond dispute that modern scientific control is the only way to obtain quality and maintain it. There is no other way.





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# EDITORIAL



## THE METAL INDUSTRY

THE CONSOLIDATION OF  
THE ALUMINUM WORLD  
THE BRASS FOUNDER AND FINISHER  
ELECTRO-PLATERS' REVIEW  
COPPER AND BRASS

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### THE DETROIT CONVENTION

Another convention has passed into history, and congratulations all around are in order. The Detroit Foundrymen's Association is to be congratulated for the capable and efficient committees appointed who entered most enthusiastically into the work assigned to them. All the many details incidental to a gathering of this kind were most carefully considered and carried out in a manner calculated to satisfy the most critical and exacting visitor. The officers of the various visiting organizations must come in for their share of commendation and praise. The serious side of the meeting was taken care of and everything went off exactly as planned. The papers read were carefully prepared and well presented. Some of them are published in this issue of THE METAL INDUSTRY and by them our readers can judge of the high quality of the intellectual food served up for the members and their guests.

In entertainment, both of pleasure and instruction, no detail was omitted to make the occasion attractive. The dinners, the "smoker," the boat and automobile rides and works visiting were all arranged so as to give the visitor the best possible view of Detroit's attractions, and we may well understand why "once a Detroiter always a Detroiter." We are sure every one will agree with the slogan heralded all over the country that "In Detroit life is worth living."

The exhibit of The Manufacturers and Foundry Supply Association proved to meet all of its claims and expectations, both in point of number of exhibits and amount of space used. Any one who viewed the splendid display of material and apparatus devoted to the foundry trade could not but agree that conventions are worth while and that visitor and exhibitor alike are benefited and rewarded in large measure for the time, money and trouble expended. A full list of these exhibits is given in another column.

The question of obtaining a permanent building in some such city as Niagara Falls did not receive the favor that was expected. Such a scheme has its many advantages, such as the scenic attractions of the city, central location, ready accessibility to all parts of the country, and elimination of considerable expense in sending exhibits to various cities. The disadvantages of the project that may be mentioned are summed up from the visitor's point of view. The annual trip to a convention is considered more or less as a vacation, and the majority, based on opinions gathered from a number, seem to prefer a different city each year. Another point is: that by holding the convention in

a city where there are a less number of counter attractions better attention is given the exhibition and the sessions. We publish in another column the expression of opinion from most of the exhibitors themselves and from these we gather that for the present at least the plan is sidetracked. This conclusion is further strengthened by the tentative plans for coming conventions which cover the time for the next four or five years.

A word regarding discussion of the papers presented may be in order here. It was noted that little or no discussion followed the papers, and what there was, was of the spontaneous or manufactured order. This was due to the fact that there was, out of the list of papers presented only one printed ahead of the meeting. Consequently no one had an opportunity to know what was going to be said, and as a result could not readily formulate any remarks in the same spirit as the paper was written. We would suggest to the committee now appointed to "get busy" early and make an earnest effort to have the papers in print some time before the meeting, so that they can be placed in the hands of the members in ample time for the preparation of discussion. We would also advise that the committee on papers also have the power to arrange for the discussions instead of the committee on sessions; in this way it seems to us the program can be materially strengthened before the date of the meeting.

#### DISPOSITION OF WASTE MATERIAL.

We publish in this issue of THE METAL INDUSTRY an able article by Jesse L. Jones on The Selling of Brass Foundry Refuse, and we commend it to the attention of every one interested in the metal business. The conservation of waste material in any manufacturing business is a most important factor and very often the margin of saving from waste material represents the difference between profit and loss in the operation of a business. Every lot of so-called waste should be carefully examined and tested before it is finally disposed of.

Here is where the analytical laboratory should play its strongest part. Opportunities on every side are offered for the valuation of material; too much care cannot be exercised in the processes adopted for such testing.

It is only a few years ago that metal manufacturing concerns in particular did not attach a great deal of importance to the valuation of scrap material at their own plant, but took the values set upon the material by the purchaser, too often a dishonest dealer, as Mr. Jones remarks. With the advent of the chemist the situation has become greatly changed, and the "junk" dealer has lost his rich harvest, and some of the old timers can be heard bitterly complaining that there is "no money in the business any more"! We know of a case where the chemist of a plant in making the rounds of the various departments came upon a man in the wash house who was

diligently shoveling a lot of skimmings and ashes from a tinning furnace on to an iron pan heated from underneath by a coal fire. A little tin was trickling down to the end of the pan. The man was putting the grayish colored dust in a pile by the door. The chemist asked him what he was going to do with the pile. "Oh," said the man, "that dirt we sell"! "Who told you to sell it"? asked the chemist. "The boss," said the man. "Well, you keep it here until you hear from me," ordered the chemist. Taking a sample to the laboratory the suspicions of the chemist were verified when he found over 80 per cent. of tin due to oxide and minute shot in the "dirt." Subsequent investigation disclosed the fact that the mill superintendent, not a very practical man, had been advised by a friendly (?) scrap metal dealer that simple heating of his tin refuse was the best way to recover the tin skimmed off the top of the bath. The scrap man would then kindly take away the "dirt" at so much per barrel! This same chemist "discovered" the remains of two large earthenware crocks on top of a cart-load of refuse on its way to the dump. On examining closely he found a quantity of yellow crystalline material, which, upon analysis, proved to contain \$80 worth of gold—the yellow material being the dried out remains of a gold plating solution. This was not due to the ignorance of the plater, but to the fact that with the departure of one plater the firm had discontinued the gold plating process and the new comer was not given the opportunity to clean up the room. Such occurrences as the above are liable to happen in any plant and therefore eternal vigilance is necessary in order to check any and all losses, whether due to carelessness, indifference or ignorance.

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#### NEW BOOKS

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**"HARD SOLDERING."** By Harvey Rowell. Sixth edition, revised and enlarged. Size, 7½ x 5 inches; 63 pages; 14 illustrations. Price, 75c. Spon & Chamberlain, New York.

This little book is devised as a manual of instruction on hard soldering, and contains an appendix on the repair of bicycle frames, together with notes on alloys and a chapter on soft soldering. The present edition of this work has been considerably enlarged and fully revised since the publication of the fifth edition, and while much that is published in this book may be new to the beginner, and may not add materially to the skill of the expert workman in his own department of industry, nevertheless it is well to compare notes, and if only one little point is gained by such comparison, it will be worth to the practitioner the cost of so expensive a volume. We feel confident that anyone interested in hard or soft solder will be able to get valuable information by a study of this little book.

For sale by THE METAL INDUSTRY.

**"COPPER HANDBOOK."** The Manual of the Copper Industry of the World. By Horace J. Stevens. Volume 9. Revised and enlarged. Size, 6½ x 9 inches; 1,628 pages. Price, \$5. Horace J. Stevens, Houghton, Mich.

The ninth annual edition of the "Copper Handbook," edited and published by Horace J. Stevens, Houghton, Mich., is just received. This work, which has become a standard authority on the subject, for the entire globe, has, in its latest edition, 1,628 octavo pages, containing considerably more than a million words.





### NOVEL AUTOMATIC PLATING MACHINE.

To the Editor of THE METAL INDUSTRY:

"In the May issue of THE METAL INDUSTRY you published a description and cuts of the automatic plating machine now in operation in our plant, and give the credit for the conception of the machine and the construction of the same to C. J. Caley, the former general manager of our plant.

"The information which you received regarding this matter was entirely wrong and very evidently obtained from outside parties, who either wilfully misrepresented the facts, or who were entirely ignorant of the facts in the case, for the machine in question was conceived by David F. Broderick, a mechanical engineer formerly in our employ, and constructed under his personal supervision. The credit for putting it into successful operation belongs to Hugh Kelly, foreman of our plating room.

"We wish you would publish this letter in a conspicuous place in the next issue of THE METAL INDUSTRY so that justice will be done the men above noted, and credit for the conception,

construction and successful operation of the machine placed where it belongs."

RUSSELL & ERWIN MANUFACTURING COMPANY.

New Britain, Conn., May 31, 1910.

The bone of contention in this matter appears to be a matter of credit. THE METAL INDUSTRY is not particularly concerned as to who was the real inventor of the plating machine in question, but it is desirous at all times to give the facts and do full justice to every one concerned. We understood that the plating machine in its present form was designed and constructed by C. J. Caley and that it differed in many respects from the one patented by D. F. Broderick in 1907 and described in the July number of THE METAL INDUSTRY of that year.

The above letter makes no such distinction and tends to prove that our conception was wrong. If such is the case, we are glad to make the correction and give the credit where it is due.—ED.



## Shop Problems

IN THIS DEPARTMENT WE ANSWER QUESTIONS RELATING TO SHOP PRACTICE OF THE METAL INDUSTRY. ADDRESS THE METAL INDUSTRY.



### ALLOYING

Q.—Can you give a formula for gold alloy with the color of platinum that would make a suitable substitute to use in jewelry work? Also, can silver be alloyed to look like platinum and not tarnish or oxidize and be soft enough to work in jewelry manufacturing?

A.—There is no entirely satisfactory alloy known that may be substituted for platinum, but the following mixture is said to be used for this purpose:

Nickel .....	4.2 pounds
Silver .....	16.5 ozs.
Bismuth .....	.5 "
Gold .....	53.0 "

This alloy is said to be capable of being rolled into sheet or drawn into wire and to be non-corrosive. Its color is grayish white and if it were to be used for jewelry, a subsequent plating with platinum might be found desirable.—J. L. J.

### BRIGHTENING

Please publish a formula for a cyanide solution to brighten up nickel (on cast iron) that has become tarnished from heat, on both polished and unpolished work but not bad enough to require a new plate.

A cyanide solution consisting of

Water .....	1 gal.
Cyanide .....	½ lb.

will remove the tarnish from nickel plate, if not too dull. A very dilute solution of muriatic acid acts better. Four ounces of acid to a gallon of water will be necessary to buff the articles after the oxidization has been removed, to produce a luster.—C. H. P.

### COLORING

Q.—Would you kindly let me know what would make a green color on brass?

A.—A good method for producing the verde green color upon

lamp shades is to mix carbonate of copper with sodium silicate (this is water glass), and if found necessary, add a very small amount to the mixture, apply with a soft brush and dry by the aid of heat, then lacquer the surface. This gives a good color.—C. H. P.

Q.—I would like to know about a solution for imitation gold. There is a hot dip solution composed of hyposulphite of soda, acetate of lead, but I do not know the rest of the ingredients. Can you help me out?

A.—The formula you refer to consists of the following proportions:

Hypo-sulphite of soda.....	5 ozs.
Acetate of lead.....	5 ozs.
Boiling water .....	1 gal.

The colors resulting on brass from immersion in this solution are:

5 seconds.....	pale gold.
10 seconds.....	deep gold.
15 seconds.....	brown gold.

A variety of interesting colors can be produced by removing and immersing a number of times.—C. H. P.

### DIPPING

Q.—I would like to have you give me a receipt for making what we called the old-fashioned silver dip, such as is used on safety pins or common pins.

A.—The old-fashioned silver dip consisted of cyanide of potassium and nitrate of silver and was used at a temperature of about 190 degrees. The proportions were about 4 to 5 ounces of cyanide of potassium and 1 to 1½ ounces of nitrate of silver to each gallon of water. To prepare the bath, dissolve the nitrate of silver in 1 quart of water and the cyanide in the remaining 3 quarts, then mix thoroughly and the bath is ready for use. The articles should be previously cleaned by the usual methods and then finished by the usual bright acid dipping before silvering. Use copper stringing wire or the usual earthenware dipping baskets for immersing the articles in the silver dip.—C. H. P.

## DEPOSITING

Q.—Can you give any information regarding the deposition of cadmium?

A.—The following formula for the electro deposition of cadmium gives good results, producing a silvery white deposit that surpasses tin and may prove satisfactory for your purpose.

Dissolve 8 ozs. of chloride of cadmium in a gallon of boiling hot water. Precipitate the chloride to a carbonate by the addition of carbonate of soda, so long as a precipitate occurs. Allow to cool, then filter and wash. While moist add the precipitate to two gallons of water, in which is dissolved 12 ozs. of 98-99 per cent. cyanide of potash. This constitutes the bath. Use the bath at 100 degs. with a current tension of four to five volts.—C. H. P.

## FINISHING

Q.—Please publish formula for brown finish on brass.

A.—To produce a good brown upon brass, dissolve 1 ounce of red sulphide of antimony and 4 ounces of caustic soda in one gallon of boiling water. Cleanse your brass articles after cutting down, then scratch-brush them. Then immerse in the above solution for a few seconds, remove, wash and dry, then scratch-brush the articles dry, using a soft brass wire scratch brush. After this operation use about 1 pint of the above solution in a gallon of cold water, immerse the articles in this solution for a second only, to bring up the color. Wash and dry out again. If an additional lustre is required, scratch-brush very lightly again. The articles are afterwards lacquered in the usual manner.—C. H. P.

Q.—Will you kindly tell us how to produce what is known as the Japanese or statuary bronze finish?

A.—The sample finish submitted to us is known as Japanese bronze or statuary bronze. The method of its production is as follows: Polish the articles in the regular manner (a high polish is not necessary), then cleanse in the usual manner. For plating the articles are then plated in a cyanide copper solution for five to ten minutes. If the high relief parts are not to be relieved to show the copper, if so then twenty to thirty minutes immersion will be required.

After the copper plating, wash in clean water and then immerse in the coloring solution, which should previously be prepared. The solution should consist of  $1\frac{1}{4}$  ozs. of sulphuret of potassium and  $\frac{1}{4}$  oz. of sulphate of ammonia to each five gallons of water. Use the solution cold. Immerse in the solution for a few seconds until dark variagated colors are produced, then remove, wash in cold and then in hot water, and dry out in maple sawdust. Then develop the color by scratch brushing dry using a very soft brass wire brush for the purpose or one much used. A little practice will give the correct color required. Lacquer the surface in the usual manner.—C. H. P.

## FLUXING

Q.—I wish to inquire what flux to use in a low fusing white metal of tin, lead, bismuth and cadmium. I have a lot of dross. Maybe I heat the metal too much. I use a small quantity in an iron ladle, with paraffine, and I get just as much dross as without. Also wish to know about tantalum, a metal that should have some good qualities in hardening aluminum or probably could be used for that purpose. Does it compare with an alloy of magnesium as magnalium? I wish to know the color, price, where to get it, if possible, and if it would stand corrosion in the mouth for dental purposes better than magnalium.

A.—The white metal you mention is very easily oxidized and you should be careful not to overheat it. An occasional pinch of sal ammoniac thrown on the surface of the melted alloy ought to keep it bright. Tantalum is very expensive. It may be obtained in the form of wire, sold on the condition that it is to be used for experimental purposes only, at \$8 per gram, from chemical dealers. Its price is, therefore, about eight times that of gold. You can also obtain bismuth and cadmium at the same places, but we do not know the price. Tantalum is somewhat

darker in color than platinum and it is not attacked by any of the alkalies or any of the acids, except hydrofluoric, hence it would stand corrosion in the mouth all right. The use of tantalum for hardening aluminum has not, we believe, yet been tried.—J. L. J.

## INSULATING

Q.—We find that we are crowded in our plating room for larger facilities in brass plating. Up to the present we have used vats lined with paraffine. We find that we have a vat lined with pitch. Do you think it advisable to utilize this vat for either a copper or brass solution made with cyanide of potassium and which is heated at times to 120 degs. Fahr.?

A.—It is not advisable to use a bath lined with pitch for brass or copper plating, especially so if heat is used in the bath, for at 120 degs. the pitch would soften and gradually work to the bottom of the vat. If you desire to remove the pitch, turn the vat upside down, raise it twelve to eighteen inches above the ground and build a charcoal or coke fire beneath it, surrounding the fire with old sheet iron or tin to confine the heat. After the pitch is melted the bath can be lined with paraffine if desired. Tanks made up from  $\frac{1}{4}$  to  $\frac{3}{8}$  boiler plate iron have proved most satisfactory for cyanide solutions of all descriptions.—C. H. P.

## MIXING

Q.—Kindly publish a good formula for 10-kt. gold to be used for watch cases.

A.—A good formula for 10-k. gold to be used for watch cases is:

Fine gold.....	50 ozs.
Gold alloy .....	48 "
German silver wire (Cu 5, Ni 3, zn 2).....	14 "
Sterling silver .....	8 "

—O. A. H.

## PICKLING

Q.—Will you please furnish me with the following information: 1. Formula for an acid dip to be used on cast iron before being nickel-plated. 2. Formula for a good pickle for cast iron.

A.—No. 1. Dip for cast iron previous to plating:

Muriatic acid .....	1 part
Water .....	1 part

No. 2. The best pickle for cast iron consists of hydrofluoric acid, 1 part; water 10 to 15 parts. After pickling the iron should be washed well in cold water, then immersed in boiling water, to which is added 1 oz. lime to the gallon, or  $\frac{1}{4}$  to  $\frac{1}{2}$  oz. of ammonia water. Use in a lead lined or wooden tank only.—C. H. P.

## PLATING

Q.—Will you kindly let me know through THE METAL INDUSTRY the mixture for nickel, brass, and bronze anodes.

A.—Nickel anodes usually consist of 96 nickel, 3 iron, 1 of tin. Some are purer than others and might assay 98 nickel, 1 iron, 1 tin. Brass anodes consist of 66 copper, 34 zinc. Bronze anodes 90 copper, 10 zinc or 88 copper, 10 zinc, 2 tin.—C. H. P.

Q.—You will assist us greatly, if you can supply us with a formula for platinum plating.

A.—The following formula gives excellent results in platinum plating:

Chloride of Platinum .....	1 oz.
Sodium Phosphate .....	20 ozs.
Ammonium Phosphate .....	4 ozs.
Common Salt .....	1 ozs.
Water .....	6 to 8 qts.

After preparing the solution, boil for some time and replace the water lost by evaporation. Use anodes of Platinum.—C. H. P.

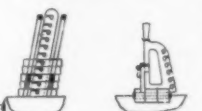
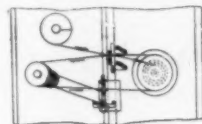
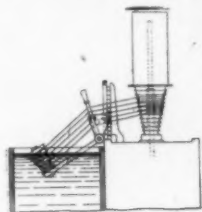


# PATENTS

REVIEW OF CURRENT PATENTS OF INTEREST TO THE READERS OF  
THE METAL INDUSTRY.

957,093. May 3, 1910. WIRE-DRAWING MACHINERY. Andrew Rathbone, Warrington England.

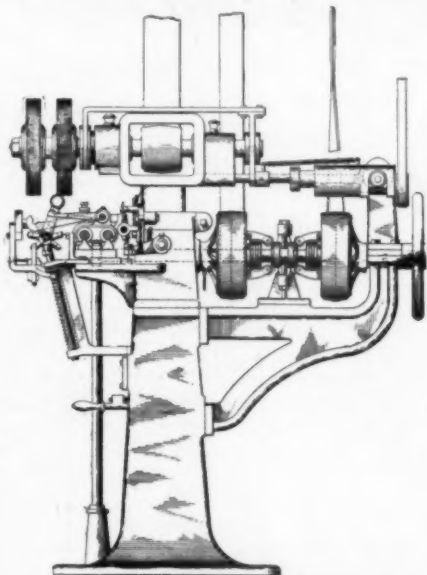
An improvement in continuous wire-drawing machinery and as shown in cut relates more particularly to that type where the wire is drawn over multiple pulleys mounted on vertical spindles; and the chief object of the present invention, in addition to that of providing a machine which will give a large output, and occupy small space, is that of being able to utilize, largely, existing machinery for wire drawing, or to reduce the cost of new machinery; that is, to simplify the making, and also the working of such machines.



The patent covers among others the following claim: An apparatus for continuously drawing wire, comprising in combination, a driving block having grooved pulley portions of different diameters, a vessel adapted to contain a liquid, a pulley over which the wire is passed, a support for moving the pulley into and out of the liquid, means for operating the support and for holding it in two positions, a guide bar through which the wire passes, said guide bar being inclined to correspond with the inclination of one side of said driving block, drawing dies, and a second guide bar associated with said drawing dies and being inclined to correspond with the inclination of the other side of said driving block.

957,198-957,201. May 10, 1910. BUFFING MACHINE. J. F. Gail, Kenosha, Wis., assignor to the Simmons Manufacturing Company, Kenosha, Wis.

This machine as shown in cut is an improvement on the one covered by patent specification No. 927,036, July 6, 1909. The machine will automatically grind, buff and polish the surface of long objects such as metallic tubes, posts or the like which



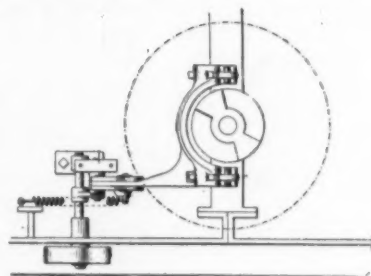
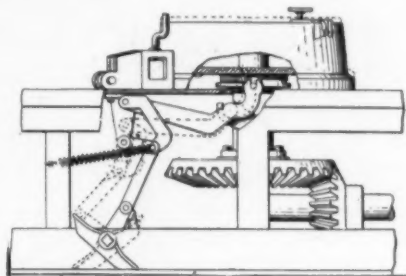
form parts of metallic bedsteads. One wheel is used for "cutting down" and another for polishing. The principal feature of the machine is the mechanism provided for the handling of the material to be ground and polished.

The object is automatically reciprocated longitudinally, under the first wheel and is given an axially rotational advance after

each reciprocation until the entire surface has been gone over by the first wheel whereupon the object is carried into association with the next wheel and similarly treated. With this arrangement it is necessary only to insert an object into the machine and to remove it only when the entire buffing operation has been completed, which completion will be indicated by the stopping of the reciprocating mechanism.

956,885. May 3, 1910. WIRE-DRAWING MACHINE. Elbert H. Carrol, Worcester, Mass. Assignor to Morgan Construction Company, Worcester, Mass.

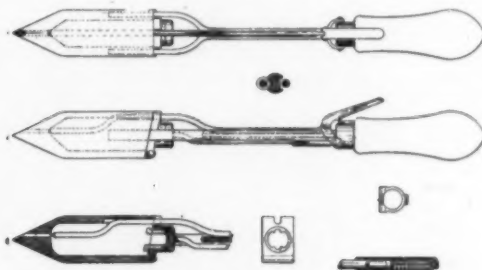
The machine shown in cut belongs to the class of wire drawing machines in which a rotating block is employed, whereon the wire is wound as it is drawn through a reducing die, the



rotating block having a clutch connection with a vertical shaft through which rotary motion is communicated to the block, and the object of the present invention is to provide a simple and effective means whereby the rotating block may be readily thrown into and out of engagement with the driving power.

957,180. May 10, 1910. SOLDERING TOOL. Alexander A. Bedard, Detroit, Michigan.

The soldering tool shown in cut is provided with a reservoir in the head for retaining a supply of solder in a molten state for



delivery as required, and its object is to provide a tool of this kind which shall be easily controlled, which shall have a removable cover for the reservoir in the head, and which shall have a spring-controlled valve to permit the escape of any gases which may accumulate in the head.



# INDUSTRIAL

NEW AND USEFUL DEVICES, MACHINERY AND SUPPLIES OF INTEREST TO THE READERS OF THE METAL INDUSTRY.



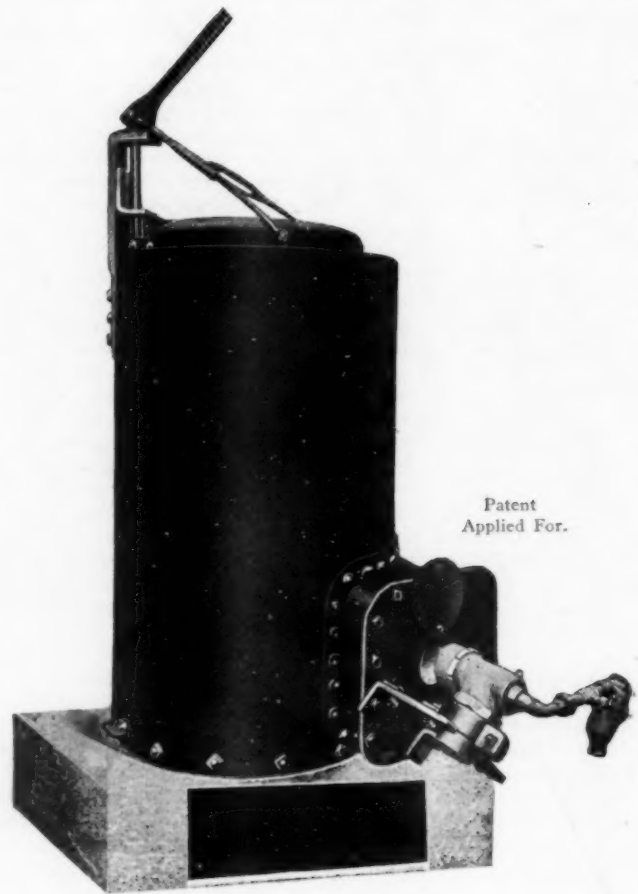
## A NEW OIL-FIRED TILTING CRUCIBLE FURNACE.

A newcomer in the field of crucible melting furnaces that attracted considerable attention at the Detroit Convention of Allied Foundrymen's Associations, June 6 to 10, 1910, is the furnace shown in the cuts Figs. 1 and 2. This furnace is the result of considerable study of the requirements by the Anthony Company, successor to the American Combustion Company, 45 West 34th street, New York. The construction of the furnace is as follows:

A circular steel shell  $\frac{1}{4}$  of an inch thick is lined with asbestos sheet. The interior lining of the furnace is made of rings of a highly refractory fire brick material, which are of a thickness necessary to make the combustion chamber conform to the size of crucible used. The crucible rests, as is shown in cut, on a block of the same kind of material, which raises the crucible to the zone of the highest heat. While the furnace was primarily designed as an oil furnace, it is so arranged that coke or coal can be used, by simply removing the bottom and the crucible blocks and letting the crucible rest on the grate bars. When using the furnace with oil fuel, provision is made for broken crucibles by holes through the bottom blocks which allow the metal to run out into a receptacle below.

One of the important features of the furnace is the "deflector ring" which is formed of a special refractory material. As the flame enters from the bottom of the furnace it passes around the block upon which the crucible sets and upward until it strikes the under surface of the deflector ring, this causes the flame to reflect downward against the sides of the crucible and thus confines the most intense area of heat to the lower half of the furnace. The heat then passes through an opening between the crucible and the deflector ring, and then past the top of the crucible to the flue.

As is well known, in the melting of easily oxidizable mixtures such as brass and bronze in an oil or gas furnace the great secret of success lies in the securing of a reducing flame. Without the reducing flame the cost of making brass by means of oil or gas becomes prohibitive when compared with the ordinary pit coal or coke furnace, owing to the excessive loss by oxidation. To overcome this all important objection to the former class of furnace the Anthony Company have devised the special type of burner shown in the cut, Fig. 3. This burner has been



Patent  
Applied For.

FIG. 1. THE ANTHONY FURNACE.

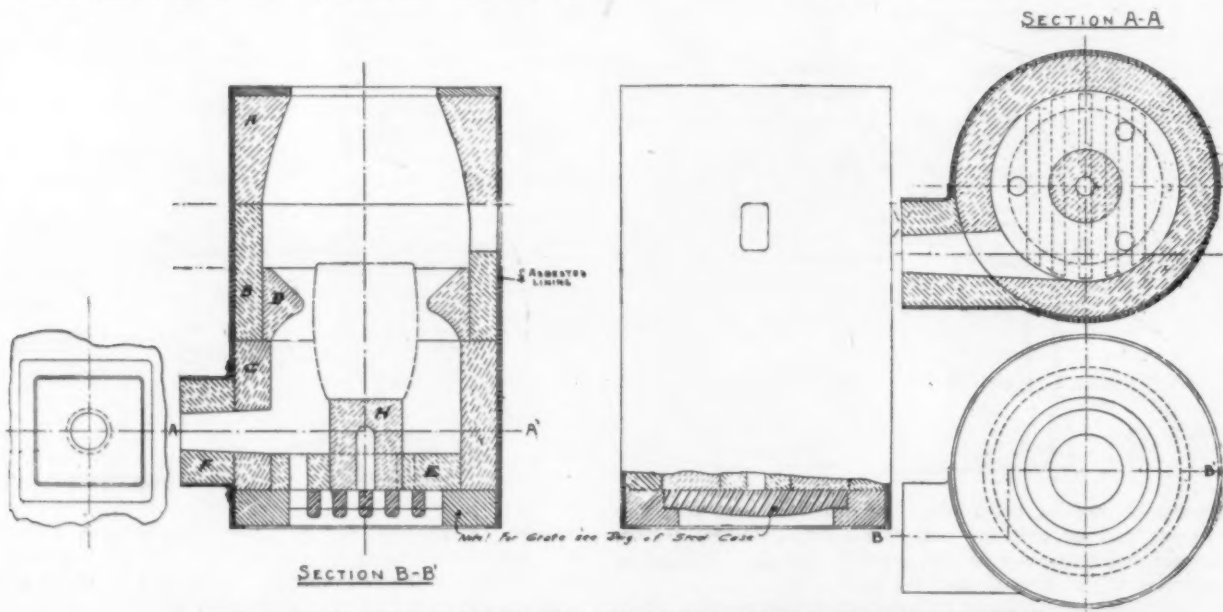


FIG. 2. PLAN VIEW SHOWING CONSTRUCTION OF THE ANTHONY FURNACE.



perfected after more than three years of experimental work under service conditions and differs from all other burners used for this purpose. It is fully protected by United States patents and operates as follows:

The oil is delivered as a fog or mist at a pressure of over 30 pounds. By virtue of the mechanical construction of the tube the oil enters a spraying plug through the inlet as shown in cut after passing through a scrubber, which removes any

through the round hole where the burner is placed, this latter supply of air is controlled by a damper and it is the only way in which any air can get into the combustion chamber aside from the quantity delivered by the fan. The fuel bursts into flame at the burner top and continues to burn with an even distribution of heat throughout the furnace, all parts of the furnace thus doing equal work.

This furnace has been in continuous operation at a large brass-producing concern in the Naugatuck Valley, Connecticut, since the first week in January of this year, and up to the present time has had no repairs of any sort whatever. The furnace accommodates a 70 crucible, holding 200 pounds to a charge, making five melts a day at an average time of 1 hr. 35 mins. per melt. The average number of heats per pot is  $27\frac{3}{4}$ , with a consumption of oil per heat of 4 gallons. The air pressure is  $3\frac{1}{2}$  ounces and oil pressure 45 pounds. The temperature of the oil used is 160 degs. Fahr. The loss by shrinkage of this metal, which was ordinary red metal mixture of 88 copper, 10 tin, 2 spelter, was 1.13 per cent. for a maximum and 80 per cent. for a minimum. By increasing the number of heats per day with the furnace the manufacturers claim that considerably higher efficiency can be obtained as the amount of oil used on the last or fifth heat, in the runs as now being carried out, shows an oil consumption of 3.10 gallons, and this can very easily be maintained and probably considerably lessened for additional heats. In this way it can very readily be seen that the average consumption of oil would be small and the cost of melting correspondingly decreased for the entire quantity of metal melted in the day's work. The time required for getting the furnace to working heat, starting from cold condition, is given at from 15 to 20 minutes; having attained the proper temperature the succeeding heats are run down in surprisingly short time. Owing to the fact that the furnace is now in better working condition than when it was first introduced it is said that an average of at least 35 to 40 heats may be expected from each crucible. Tests are now under way as to the saving to be made in the melting of yellow brass and other high spelter mixtures, and it is confidently expected that results will show the same consistence and advantage over the pit fire method as in the melting of red brass or bronze mixtures. Another record which this furnace is reputed to have made is the melting of 165 pounds of German silver with an oil consumption of  $3\frac{1}{2}$  gallons and an air pressure of  $3\frac{1}{2}$  ounces in one hour and twenty-seven minutes. The shrinkage in this case was 2 per cent. One of the important features of the furnace is that it is noiseless and there is very little waste heat. Additional information regarding this furnace may be obtained by corresponding with the Anthony Company, 45 West 34th street, New York.

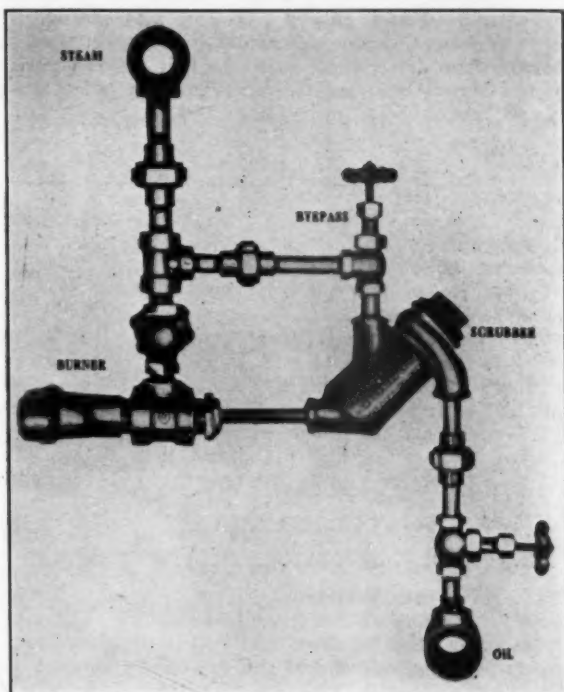


FIG. 3. THE BURNER AND CONNECTIONS.

sediment or other particles, which might interfere with the spraying operation. As it issues from the scrubber it is given a rapidly whirling motion and is then passed to the combustion chamber, where the mixture of oil and air is made. The air is furnished by a fan pressure of from three to four ounces. The air supply from the fan is controlled by a screw cap, which covers the end of the burner. Some free air is also admitted

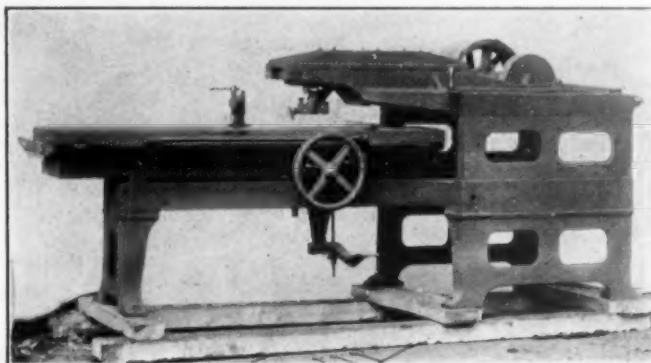
### SHEET METAL SCRAPING MACHINES, BELT AND MOTOR DRIVEN.

NEW AND IMPROVED MACHINERY FOR THIS IMPORTANT STEP IN THE MANUFACTURE OF SHEET METAL.

All sheet metal of brass, bronze and German silver must be "overhauled" or scraped following the annealing or softening after the first rolling. This scraping consists in the removal of the outer surface of both sides of the bar of metal. By this means all the dirt, etc., that has adhered to the surface of the metal during the casting process is removed, leaving a clean, smooth surface for the subsequent rolling. In the olden days this operation of "over haul" consisted in scraping the surface of the bar with a hand tool. This was laborious, tedious and expensive and soon gave way to a machine. The first of these machines which was successful in imitating the hand process was known as the "Stever scraping machine." In brief the operation of this machine is as follows: The work is clamped to a movable table and is brought up against a scraping tool by depressing a foot treadle. The tool, which has a fixed stroke is clamped in a rocking holder and is raised and lowered automatically so that it is kept in contact with the sheet during the cutting stroke and away from the sheet during the return stroke. The sheet is moved into the desired position by the operator, the table having both longitudinal and transverse feeds under easy control.

The machines built on the Stever type have been gradually improved and the latest developments are embodied in those shown in the cut and are the product of the Waterbury Farrel Foundry and Machine Company, Waterbury, Conn. This

company claims for their machines that they are as much in advance of machines previously built as the old Stever ma-



WATERBURY FARREL FOUNDRY AND MACHINE COMPANY'S NEW OVERHAULING MACHINE.

chine was over the hand process; they are refined in design, workmanship and materials and cover thoroughly the ground demanded by modern methods of production. These machines permit of operating the cutting tool at a high speed and are

strongly constructed, so that the large chips are rapidly removed. The use of the modern high-speed steels has been one of the important factors in forcing the design of a suitable high-speed machine; these high-speed steels allowing of much greater cutting speed without undue wear than the older types of steel.

A very important feature in connection with the rapid scraping of the brass surfaces is to have the machine very convenient and with the tables arranged, so that they can be easily shifted and properly proportioned, so that an operator can work at scraping all day without appreciably reducing his production toward the end of the day, as would happen if the table parts were too cumbersome. It is also very important to have the design such that the accumulating chips will not obstruct the operation of the machine and demand frequent stoppages to clear away. These points have all been carefully worked out in these machines. The table which moves back and forth under the tool and which the operator shifts by hand is made of cast iron with thin sections but strongly ribbed, thus giving the necessary strength and desirable lightness.

The feature which materially assists in obtaining the above points, and which is for other reasons valuable, is the location of a support immediately under the center of the table. This is one of the patented features. It is practicable to provide this only on account of the improved rack and pinion paralleling arrangement which supplants the old segment lever arrangement for making the two ends of the table move easily and without cramping. This rack and pinion arrangement is constructed so that it is entirely covered up and therefore the troublesome clogging of the segment levers with the chips, which was quite a serious matter, has been done away with.

The down and end thrusts on the table caused by the scraper tool are cared for by separate sets of rolls; two sets of rolls with vertical axes taking care of the end thrust, and two sets of rolls with horizontal axes taking care of the down thrust. These rolls all run against flat surfaces of ample proportions and supplant the grooved rolls which were formerly used. The rolls and tracks are well protected from the chips. This construction reduces materially the troublesome end shake which the old construction did not care for. The scraping tool proper is made from a commercial size of bar steel. It can have both or only one of its ends ground as may be desired. No forging is required. The flat piece is clamped directly into a tool holder from which it is readily removable and into which it can be easily placed, care being taken to make it very convenient to change tools.

It is recommended that these tools be made up in quantities with the cutting edges ground accurately to the proper angle, and that they be kept in storage available for frequent changing. This will not only make the first cost and up-keep as low as possible, but it will also help materially to keep down the cost of actual scraping—this for the reason that sharp and properly ground tools will always be at hand and the operator will not have to leave his machine and devote any time to the care and making of the tools, but will be in a position to keep his machine going practically all the time. The means for operating this tool is another of the patented features. The tool is pressed against the bar to be scraped by a cam located almost directly over it.

This cam is of the rocking type and receives its motion through a connection from an arm on top of the pitman which moves the main slide back and forth. As this cam rocks in one direction, it pushes down the tool and holds it there, while when it rocks in the other direction it allows the tool to rise. The cam is made of tool steel hardened and runs against a hardened tool steel roll turning on a roller bearing. Suitable adjustments for the tool are provided. The design is such that the tool can be readily operated at high speed, and at the same time the mechanism is so constructed that heavy strains are well provided for.

The slide which carries the mechanism is made from a steel casting very carefully ribbed and made as light as practicable. It is constructed with a flat top running against a carefully fitted cap, which extends out on the overhead frame and backs up the slide directly over the place where the scraping is being done. This feature corrects the difficulty which has existed with the old square slide, i. e., the tendency to wear excessively in the outer bearing and develop a bad shake, which was not only bad for the production, but also more or less difficult to repair. The

flat top slide not only admirably adapts itself to taking up any wear, but the design in itself is such that the wear is reduced to a minimum. At an extra charge this slide can be provided with bronze wearing surfaces. The illustration shows the belt driven machine.

Where alternating current motors are used a 3 h. p. motor is recommended, but if direct current motors are wanted a 6 h. p. motor should be provided. The patterns are such that the machine can be adapted to receive any make of motor. A properly certified print of it should, however, be sent with the order. The method of connecting the motor and the flywheel is by means of a silent chain drive, and unless especially ordered to the contrary, this arrangement will be furnished with motor drives.

#### GENERAL DIMENSIONS OF STANDARD MACHINES.

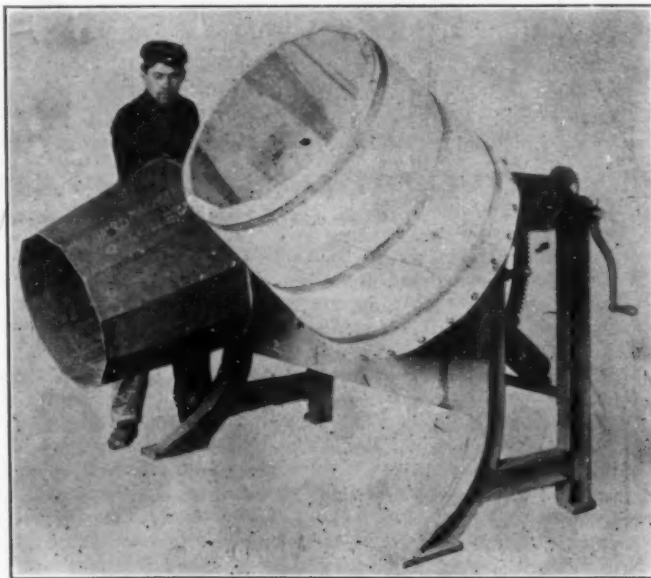
Top of table .....	84	x 12	ins.
Stroke of scraping tool .....	9		"
Section of tool steel for tools.....	$\frac{3}{8}$ x $1\frac{1}{4}$		"
Strokes of tool per minute .....	200		
Transverse motion of table .....	12		"
Longitudinal motion of table .....	74		"
Diam. and face of flywheel and loose pulley (belt machine) .....	20	x $4\frac{1}{2}$	"
Diam. and face of flywheel (motor machine) ..	22	x $4\frac{1}{2}$	"
Floor space (belt machine).....	$13\frac{1}{2}$ x $4\frac{1}{4}$		ft.
Floor space (motor machine).....	$13\frac{1}{2}$ x $4\frac{3}{4}$		"
Weight (belt machine) .....	5000		lbs.
Weight (motor machine) with motor about...	5550		"

Further information can be obtained by addressing the Waterbury Farrel Foundry and Machine Company, Waterbury, Conn.

#### A NEW DOUBLE OBLIQUE TILTING TUMBLER.

This machine was designed to meet a demand from those concerns using many of this type of machine, and takes up less room than two single machines and is driven by one belt. The barrels are entirely independent and one can be emptied and re-filled while the other is in motion. The barrels are also interchangeable and can be of wood, cast iron, steel, sheet or cast brass, the No. 1 machine taking barrels 16 inches to 22 inches at base and the No. 2 machine 22 inches to 28 inches at base.

The double machine, shown in cut, possesses all the advant-



BAIRD OBLIQUE DOUBLE TUMBLING BARREL.

ages of the regular single Baird oblique tilting tumbling barrels, and work and water can be put in barrel and articles inspected to note progress, and barrels tilted to angle desired, all without stopping the machine. They are also provided with ring oiling bearings of bronze which can be easily replaced when worn out, adjustments, etc. These machines are largely used for polishing and grinding articles of all kinds. Write the Baird Machine Company, Oakville, Conn., for "Baird" Bulletin No. 300 for full particulars.



### THE WADSWORTH VERTICAL JAR-RAMMING CORE-FORMING MACHINE.

A very interesting exhibit among the many shown at the Convention of Associated Foundrymen held in Detroit, Mich., June 6 to 10, 1910, was the one of the Falls Rivet and Machine Company, Cuyahoga Falls, Ohio. This exhibit consisted of the core-forming machine, the invention of G. H. Wadsworth, superintendent of the company, shown in the accompanying cuts. The machine was designed for the purpose of making cores of all sizes and descriptions, by making use of such tubes and dies as may be necessary for the style of core made.

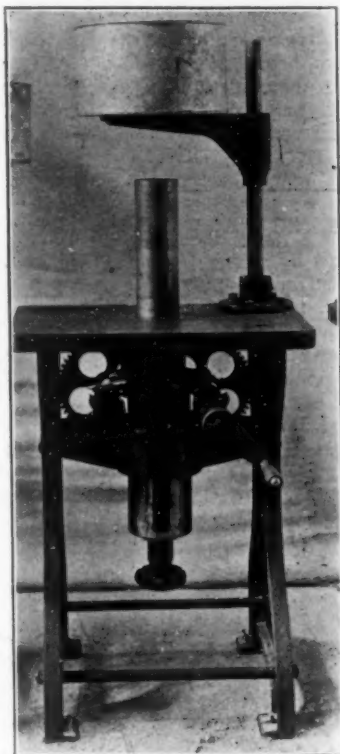


FIG. 1. CORE MACHINE.

This screw is first adjusted as to the proper length of core to be made and then the tube is forced through the table of

The mechanism is shown in Fig. 1. The machine consists of a table supported upon suitable legs, between which the operating mechanism is situated. The core is formed in a vertical shell or core box, sand being supplied from the swinging hopper above the machine. As the sand is fed into the core box or shell the crank at the right is slowly rotated so that the ratchets upon the shafts at each side of the center of the machine alternately lift and drop the core box or core tube. The stool which supports the entire mechanism for forming the core has projected from it wings in the form of pawls. These wings rest on two ratchets, so that the mechanism is lifted from both sides at the same time. The ratchets are kept in proper position by the gears seen at the back of the machine. The core tube, A, works in a sleeve B, and is controlled by the adjusting screw C.

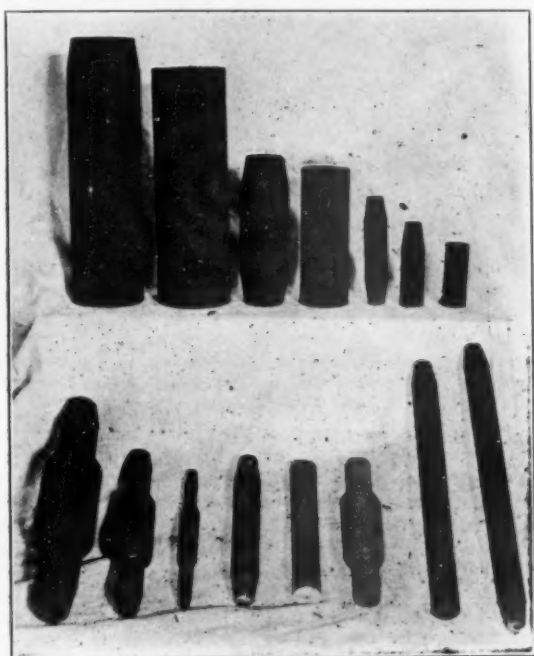


FIG. 2. CORES MADE ON MACHINE.

the machine by lifting the adjusting screw and turning it into the groove at one side of the vertical slot as shown.

For making an ordinary straight core the straight tube itself is all that is necessary. For irregular cores special dies or core boxes are introduced on the inside of the tube A, and the jarring motion of the machine compacts the sand into the box, causing it to feed out under the shoulders of chambered cores. A group of cores made in this machine is shown in Fig. 2. At the rear are shown straight cores and cores with tapered prints on one or

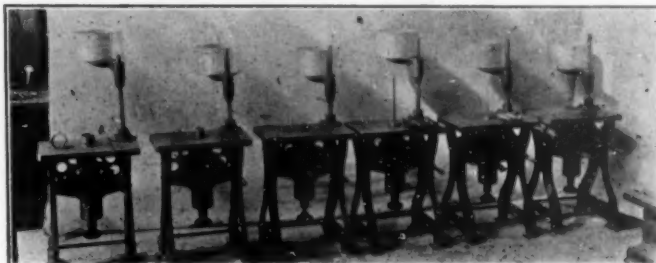


FIG. 3. GROUP OF MACHINES READY FOR ACTION.

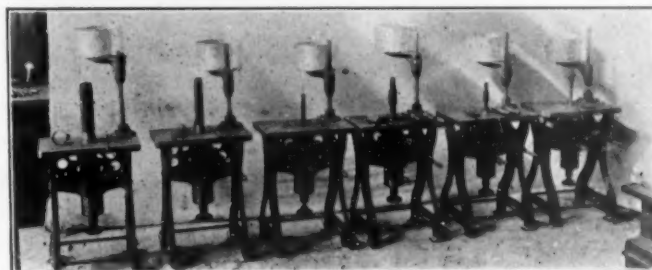


FIG. 4. MACHINES AFTER CORES HAVE BEEN FORMED.

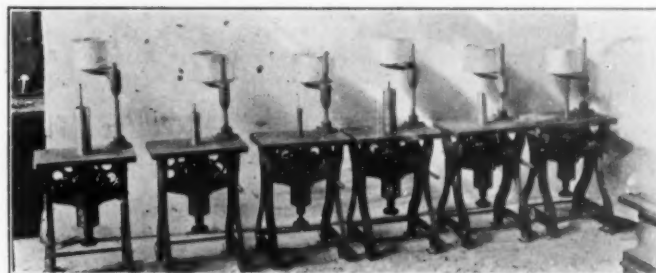


FIG. 5. MACHINES WITH DIES IN PLACE READY FOR RAMMING.

both ends. The front row contains a number of chambered cores. The core at the left is not only chambered but provided with tapered prints at both ends. The large diameter is  $2\frac{3}{4}$ , and the main body of the core 2 inches. The difference in diameter between the various parts of the other cores is plainly shown. A group of the machines shown at Detroit can be seen in Fig. 3. In this illustration all of the dies have been drawn down through the tables. In the three machines at the left the vent rods have been drawn and are lying on the table, while in the three machines at the right the vent rods are in place. At the left of the central spindle of several of the machines can be seen the bushing which is placed in the top of the die to form the upper tapered print. At the right of the central spindle on three of the machines can be seen the split core box or special die which is introduced into the machine for forming chambered cores. The lower end of these die-boxes is tapered in such a way that when the outer casting or tube is drawn down through the table of the machine the dies fall away automatically, leaving the core standing upon the lower stool.

Fig. 4 shows the machines after the cores have been formed. The two cores at the left each have tapered prints top and bottom, and in the illustration the lower tapered print is standing in the lower die. These cores are turned over on to a former

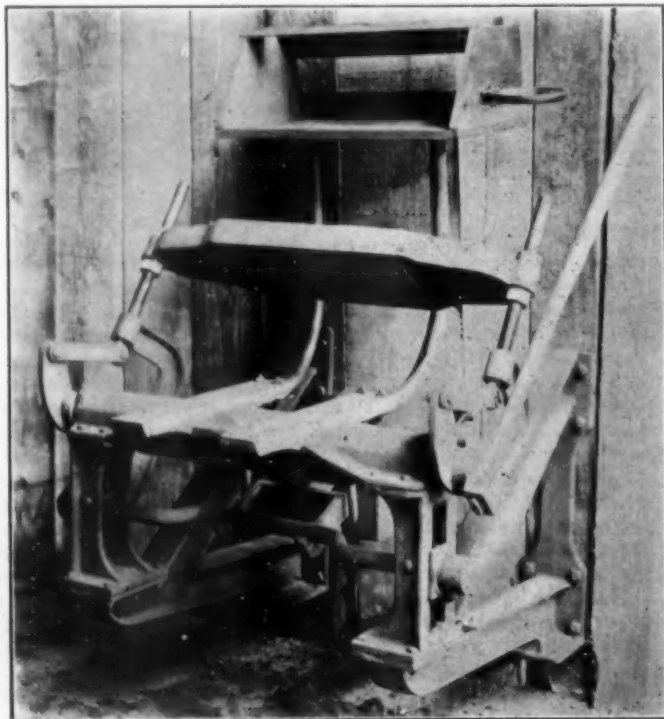
or drier which is placed against the side of the core, while it is still in a vertical position. After the core is turned over the bushing forming the lower tapered print, and which also acts as a stool, is withdrawn from the sand. On the third machine from the left is shown a straight or parallel core. The three machines at the right all show chambered cores. These also have to be turned over on to special driers or pans. Cores with tapered prints can also be dried on end standing in the stool which forms the lower part of the die on the machine. These stools are exceedingly simple in construction and can be made in quantities on an automatic screw machine so that they furnish very convenient core pans.

The machines with all of the dies in place ready for ramming cores are shown in Fig. 5, and it will be noted that the vent rods project above each one of the dies, thus insuring a clear vent through the entire length of the core. The vent rods are drawn up out of the cores before the dies are stripped down. In the case of the three machines shown at the left the stripping of the tube or die through the table of the machines leaves the upper thimble for forming the upper tapered print standing on the core. This is picked off by hand and is shown at the left of the machines in Fig. 4.

The mixtures for use on this machine have to be somewhat different from those employed in the screw type of core machine. In general, these mixtures approach more nearly those used in multiple core boxes in turning out work by hand. Any good grade of core oil can be used as well as linseed oil, and a considerable portion of old core sand could be introduced into the mixture. Mr. Wadsworth has found the best results are obtained when the batch is made in one of the Wadsworth mixing mills, as the grinding action of the rolls improves the bond in the sand. In the general practice in his own foundry Mr. Wadsworth is using a black core compound as the principal binder. For wetting down he is using glutrin, and he has experimented with several different grades of linseed oil and core oil, all of which have given very fair satisfaction.

#### NEW TYPE OF FARWELL SQUEEZER.

The machine shown in the accompanying cut is one of the new types of molding machines now being brought out by the Adams Company, manufacturers of foundry molding machines, etc., Dubuque, Ia. This machine, as will be seen, is designed to attach to the wall instead of being mounted upon legs, the advantages of which will be readily appreciated when it is con-



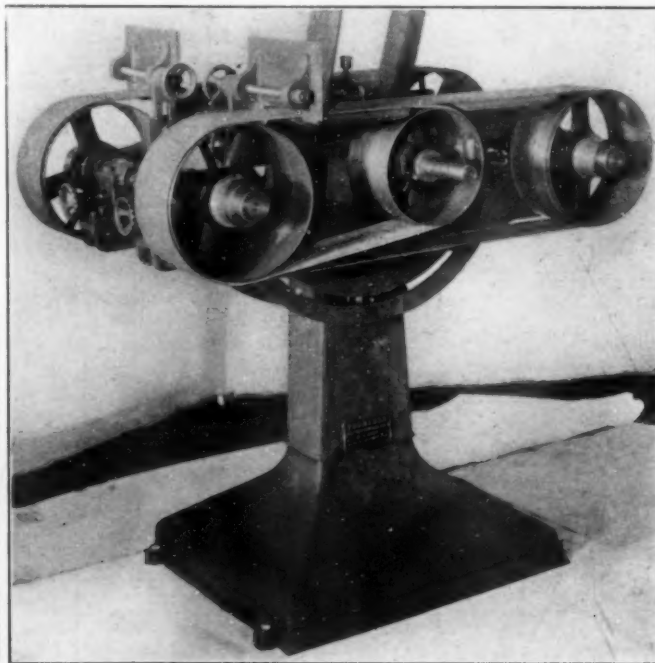
THE FARWELL WALL BRACKET SQUEEZER.

sidered that the whole outfit occupies very little space and where floors are crowded makes it possible to put up one or two more rows of molds. This bracket squeezer is built in four sizes, 24, 30, 34 and 38 inches between the side rods and brings the total line of Farwell molding machines, manufactured by the Adams Company, up to seventy-two various styles and sizes. This complete line was on exhibition at the Associated Foundrymen's convention at Detroit, June 6 to 10, and attracted a great deal of attention.

It should not be understood that this machine is to take the place of stationary Farwell squeezers or any of the other types, it being a special design suitable only for certain conditions. The proper machine for most foundries is the ordinary portable squeezer which can be moved three or four times a day, thus saving a great deal of work in carrying molds and moving sand. When floors are very narrow the broad gauge type of portable machine straddling the sand heap may be used, but this machine must be moved more frequently and necessitates a constant cleaning of the floor, so it is not recommended where the regular portable machine can be used.

#### PEERLESS POLISHING MACHINES.

The method of polishing metals by means of an abrasive belt, using standard material bought from manufacturers of emery and other artificial abrasives, and made endless by a special process, dates back to 1894, when E. J. Bein was awarded a patent for a machine carrying a belt of this description. Like everything new it has taken a long time to educate manufacturers to see the possibilities of a machine of this type, but Mr. Bein has persisted in the work of developing these machines and today many large manufacturers are using them, some firms



THE PEERLESS BELT POLISHING MACHINE.

having as many as seventy-five machines. There are a large number of belt polishing machines now on the market, but the Bein machine is claimed by its makers, the Peerless Abrasive Machine Company, Newark, N. J., to be the original.

The type of machine shown in the cut is one that can be used for many purposes in finishing brass and metal surfaces. It has the advantage of having coarse and fine belts, both on the same machine, so that the operator can finish the work in hand without changing the belts. The belts can be used horizontally, vertically or at any angle. The machine is driven from the center pulley, driving an idle pulley at one end by means of a canvas or leather belt, under which rests a table for finishing surfaces that are more or less flat. The abrasive belt passes over the canvas belt and transmits power to an idle pulley on the opposite end of the machine, on which there is also a platen.



With the machine in this position accurate flat surfaces can be produced, it having no cushion effect, but running directly over a planed straight surface.

The machine can also be used as a buff wheel by placing the machine at an angle of about 45 degrees and using the cushioned end for that purpose. This gives a length of about eight feet of surface, and the operation of changing from coarse to fine belts takes but a few seconds. The machine is compact and takes up but very little room. Many other styles are made with belts from six inches to twenty inches in width, both vertical and horizontal.

#### THE FLEXEMERY WHEEL.

In the wheel shown in cut the makers claim a flexible emery wheel has been produced that will conform itself to the most difficult curved surfaces that a metal worker is called upon to negotiate. Not only is this contrivance more efficient than the ordinary made-up wheel, but it is so constructed that it is bound to be more durable and grind with uniform results from the time it is put on the spindle until it wears down to the base. This feature alone, it is claimed, makes it a triumph over the old made-up wheel. This new device, known as the Flexemery Wheel, is manufactured and sold by the Flexible Abrasive Wheel Company, Newark, N. J.

Instead of an emery stone the inventor has provided square bits of abrasive cloth, ingeniously joined and mounted on edge on two rattan reed rings supported by an aluminum center. The wheel at present is made in two sizes: six and one-half inches, and twelve inches in diameter, respectively. There are 600 square inches of abrasive cloth in the small wheel and 2,400 in the larger one. When worn down, the sections of emery cloth can be replaced by new ones.

The wheel is made just flexible enough to allow the worker to get into corners and difficult parts and work around curved surfaces freely and effectively. The makers say the principle used in its construction is new, and patents have been applied for. There is nothing else on the market like it and for polishing instruments, drop forgings, knives, builders' and automobile hardware, etc., it is said to be unequalled. It also proves its superiority on brass castings, lead and other soft metals because it does not clog up; neither does it heat up the work as other wheels do, the inserts



THE FLEXEMERY WHEEL, SHOWING PART OF HUB DETACHED.

acting as a fan while revolving. A nuisance that is done away with by the use of the Flexemery Wheel is the ill-smelling glue pot that more than once has caused the use of naughty language.

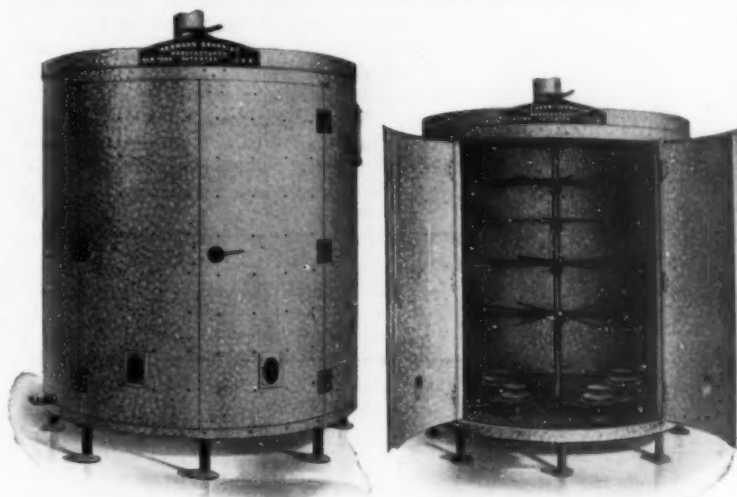
This is the initial announcement to the trade of the Flexemery Wheel, but it has undergone tests in a score of large plants where economical production is the watchword and has been placed upon the market only after both the manufacturers through their own experience, and actual users, have proved its efficiency, and the manufacturers state that taking into due consideration

its increased capacity and wearing qualities the Flexemery Wheel costs less by the wheel, and surprisingly less by the year, than the present made-up wheel.

The Flexible Abrasive Wheel Company also supplies automatic polishing machines that cut down and polish iron and steel rods and pipe at the rate of about four thousand feet a day with the use of the Flexemery Wheel.

#### A NEW OVEN WITH REVOLVING RACK.

One of the ovens illustrated on this page was recently installed at the works of the Boyd Steel Spring Company, Brooklyn, N. Y., by Hermann Gehrich, 518 Water street, New York City, whose



THE GEHRICH OVEN CLOSED AND OPEN.

sectional portable ovens are well known in the metal trade. This new type with revolving rack is being used by the Boyd Company, who are manufacturers of all kinds of springs and who make a specialty of high-grade automobile springs, for bluing and tempering purposes and has been found completely satisfactory on account of the uniform degree of heat it maintains.

The oven shown in the cut is the second of this type to be built. It is 5 feet, 11 inches in diameter, made of galvanized iron, lined with 2-inch asbestos molded blocks, and fitted with "Gehrich Cluster Blast Burners." The vertical shaft in the center of the oven has attached to it a number of adjustable collars with steel prongs. These prongs are used to hold mesh baskets filled with small springs. Large springs are suspended directly from or laid upon the prongs. At the top of the shaft is a bevel gear which connects with the line shaft and revolves at the rate of five to ten times per minute. The revolving of the rack and the work it supports causes a circulation of heat in the oven and distributes it uniformly so that an absolutely even temperature is maintained.

Complete particulars of this oven may be obtained by writing to the manufacturer for circular "G."

#### GREDA.

Gredag is the trade name adopted by the International Acheson Graphite Company for its graphite grease in order that it may be distinguished from the inferior grease products which contain impure natural graphite. The graphite blended with a high grade grease in Gredag is an electric furnace product, the purest in the world. As it is soft and unctuous, this graphite is a perfect lubricant in itself, but in Gredag are combined all the merits of both graphite and grease, the combination making a lubricant of high quality and value.

The University of Pittsburg (Pa.) has adopted a plan of co-operative instruction in technical subjects which combines to an unusual degree the advantages of theoretical and practical training. Courses in civil, mechanical, electrical, chemical and sanitary engineering are offered to students who will spend part of their time in the employ of various industrial plants of importance in the Pittsburg district. Full particulars regarding these courses can be obtained from the secretary of the university.



# Associations and Societies

DIRECTORY OF AND REPORTS OF THE PROCEEDINGS OF THE METAL TRADES ORGANIZATIONS.



## NATIONAL ELECTROPLATERS' ASSOCIATION OF THE UNITED STATES AND CANADA.

President, Charles H. Proctor, Arlington, N. J.; Treasurer, H. H. Reama, New York, N. Y.; Corresponding and Financial Secretary, Geo. B. Hogaboom; Recording Secretary, Royal S. Clark. All correspondence should be addressed to the Corresponding Secretary, Geo. B. Hogaboom, 656 Hunterdon St., Newark, N. J. The objects of the Association are to promote the dissemination of knowledge concerning the art of electro-deposition of metals in all its branches. Meets

the first Friday of June, July, August and September, 8 p. m.

The sixteenth regular meeting of the National Electroplaters' Association of the United States and Canada was held at the Hotel Chelsea on June 3, 1910, with twenty-six members present. George E. Irwin was elected to active membership.

The Printing Committee reported progress and stated that the names of the charter members would be published in the pamphlet which is to be issued. The librarian reported progress as to the printing of transactions. Charles H. Proctor, the president, read the letter of greeting, which was sent to the convention of the American Brass Founders' Association in Detroit.

The room in which the meetings of the N. E. P. A. have been held will be closed for the summer and a committee of three, consisting of Messrs. Brown, Hogaboom and Gehling, was appointed by the chair to select another place for meeting.

There was much discussion as to the advisability of discontinuing the present advertisement in *THE METAL INDUSTRY*, inasmuch as the association has received many requests for the services of foremen electroplaters and cannot place any with these firms, as no member is out of employment. Some members seemed to think that an advertisement worded so as to call the attention of platers to the existence of the N. E. P. A. would be the proper thing just now. A committee of three, Messrs. Hogaboom, Straub, and Bannard, was appointed to consider the advisability of continuing the advertisement.

William Voss read a paper upon the necessity of a plater understanding the electrical side of plating. Charles H. Proctor announced that he would read an article at the next meeting upon the art of decorating metals by the aid of pigment colors, and would have some samples of finishes for inspection.

The smoker held at Schutzen Hall, New York City, Friday evening, June 10, was attended by about one hundred members and their friends. The committee consisting of Messrs. Schneider (chairman); Hoffman, Fannon, Sliter and Baxter had worked hard to make the evening a success, and many expressions of appreciation of their efforts were heard. A program, including songs, dances and other vaudeville acts, and an exhibition boxing match, were enjoyed by those present.

## AMERICAN SOCIETY FOR TESTING MATERIALS. Affiliated with the International Association for Testing Materials.

President to be elected. Vice-President, R. W. Leslie; Secretary-Treasurer, Edgar Marburg, University of Pennsylvania, Philadelphia, Pa., to whom all correspondence should be addressed. The objects of the Association are: The development and unification of standard methods of testing; the examination of the technically important properties of materials of construction and other materials of practical value and also the perfecting of apparatus used for this purpose. These objects will be furthered: 1. By the Congresses and other meetings of the Association. 2. By the publication of an official journal. 3. By any other means that may appear desirable.

The Thirteenth Annual Meeting of the Society will be held at the Hotel Traymore, Atlantic City, N. J., on Tuesday to Saturday, inclusive, June 28-July 2, 1910.

The Executive Committee has decided to propose certain amendments of the by-laws at the approaching annual meeting, to the following general effect:

1. To abolish the contributing membership class on the ground that adequate financial support for the legitimate running expenses of the Society should be distributed evenly over the membership at large.

2. To increase the dues from \$5.00 to \$10.00 a year with the understanding:

(a) That a Year-Book, bound in cloth, shall be furnished annually to members, containing in addition to the contents of the present annual pamphlet, all standard specifications in revised up-to-date form. There are at present twenty-four standard specifications aggregating 121 pages, which, with the other matter referred to, will make a volume next year of about 275 pages.

(b) That the annual volume of the Proceedings shall hereafter be supplied in cloth binding to members without extra charge for binding, and that the additional charge for half-morocco binding shall be 50 cents instead of \$1.00.

(c) That a new class of Junior membership be created, consisting of persons less than thirty years of age, for whom the annual dues shall be \$5.00, and who shall enjoy all the privileges of members.

The proposed increase of dues will enable the Society to cancel the estimated deficit of \$2,000 at the end of the current fiscal year; to meet its running expenses promptly; to extend better financial support to its technical committees; to adopt a more liberal policy with respect to advance publications of papers and committee reports; to enlarge its clerical facilities; and to lease more adequate quarters for the storing and handling of its publications.

Technical Committees.—The large and constantly increasing number of technical committees has led the Executive Committee to authorize the adoption of a more systematic scheme of enumerating these committees, which is intended to become effective from and after May 1, 1910. Under the new schedule the Committees on Non-Ferrous Metals as published in *THE METAL INDUSTRY* for April come under the following:

### B. Non-Ferrous Metals.

W B1. On Standard Specifications for Hard Drawn Copper Wire.

ZZ B2. On Non-Ferrous Metals and Alloys.

### E. Miscellaneous Subjects.

K E1. On Standard Methods of Testing.

Membership.—The total membership reported at the last annual meeting was 1,160. Since then 130 applications for membership have been approved, 17 members have resigned, and there have been 7 losses by death, making a net gain of 106, and a present membership of 1,266.

By united efforts the membership should be materially increased before the approaching annual meeting. The Executive Committee appeals with confidence to the members to bring the advantages offered by the Society to the favorable notice of persons interested in the objects for which it stands.

## STANDARD ALLOYS OF COPPER.

A recent number of *La Fonderie Moderne* contains an article entitled, "Notes on Copper Melting." The chief point made by the author is on the industrial advantages to be derived from a rigid standardization of all commercial alloys and the stamping of each bar in such a way as to identify its composition.





# PERSONALS



ITEMS OF INTEREST TO THE INDIVIDUAL

## JEREMIAH HOWE.

Jeremiah Howe, who has been connected with the brass and copper rolling mill business for nearly forty years, has resigned his position as general manager of the Buffalo Copper and Brass Rolling Mills, Buffalo, N. Y., and will spend the summer in Europe.



JEREMIAH HOWE.

There are few rolling mill superintendents better known than Mr. Howe. Starting in 1871 with the Coe Brass Manufacturing Company, of Torrington, Conn., he left there in 1881 to go with the Detroit Copper and Brass Rolling Mills, of Detroit, Mich., when they first began to roll metal and which at that time was a comparatively small concern. There were but 65 in their employ. Mr. Howe rounded out a

quarter of a century of service as general superintendent of this mill and when he left, the number of workmen had increased to 1,000.

After retiring from the Detroit Mills, Mr. Howe stayed out of active business about two months, when, in connection with a number of Detroit's business men, he established the Michigan Copper and Brass Company and became superintendent. When the mill was finished and running, the strain of building and operating told on Mr. Howe, and his health failed. From overwork he had to retire from active business for one year. On recovering his health he intended to take a long rest, but was soon in the harness. The Buffalo Copper and Brass Rolling Mills had been in operation for about six months and had not been a success metallurgically or financially. They came to Mr. Howe to run the mill and he went to Buffalo intending to stay ten days, but remained there a year and eight months, becoming general manager. The mill was put on a paying basis and when they took inventory the first of April, 1910, the mill had made up all losses and was some to the good. Mr. Howe at present does not intend to get in active business again, but those who know him believe that he cannot keep away from the whirl of the mill for any length of time.

George B. Hogaboom, foreman plater for the Clements-Archibald Company, Newark, N. J., has been appointed instructor in electro-plating in the Newark Technical School. He succeeds J. M. Morehouse, who has resigned. Mr. Hogaboom graduated from the course in electro-plating in the class of 1910, and in addition is a practical plater of many years' experience. The Newark Technical School is to be congratulated on securing as instructor a man of Mr. Hogaboom's experience and ability, as in him exists a rare combination of theory and practice working in harmony. Mr. Hogaboom also should be congratulated on the opportunity that he now has to impart from his store of wisdom to those who have been less fortunate in point of experience than he.

The course of electro-plating at the Newark Technical School which Mr. Hogaboom has become instructor extends over two years and comprises lectures on general chemistry, physics and electro-plating, laboratory work in experimental chemistry and qualitative separations, electro-plating, consisting of preparation of work for electro-deposition, pickling, scratch brushing, polish-

ing and buffing, stripping processes, electro-deposition of copper, brass, nickel, gold and silver, finishing processes and lacquering. The instruction in this course requires four evenings per week during the first year, and three evenings during the second, and no examination is required for admission.

G. M. Conner has been elected secretary and treasurer of the Paige Retort & Crucible Company of Taunton, Mass., to fill the vacancy caused by the death of E. D. Paige. Mr. Conner is a Southerner by birth, having been born at Wheeling, W. Va. He is a self made man in the strictest sense of the word, having made his own way with no help other than his own exertions. After working his way through college he spent several years in public school work. He went to Taunton from Irwin, Pa., where he was head bookkeeper and cashier for the Jersey Cereal Food Company. Mr. Conner reports that the Paige Retort and Crucible Company has reorganized its affairs, and has elected a new director in place of E. D. Paige, put more capital into the business and will continue the manufacture of retorts, crucibles and graphite products with more extensive plans than before.

Ernest A. Lewis, of 310 Dudley Road, Birmingham, England, the well-known English metallurgist, who does considerable business with America, has in connection with his father, Charles Lewis, formed a partnership of Lewis & Company, as designers of brass foundries, casting shops, annealing furnaces, muffles and all work connected with the copper and brass industry. They prepare plans for completely equipping foundries and casting shops of any size and remodeling old shops on modern lines. Mr. Charles Lewis is a practical builder and was for twenty years with the Muntz Metal Company, Limited, and is thoroughly acquainted with the copper trade. The business of Ernest A. Lewis, analyst and chemist, will be continued the same as formerly.

James M. Morehouse, who is interested in the James M. Morehouse Company, job plating shop in Newark and the Newark Brass Plate Engraving Company, manufacturers of high-grade etched name plates, has found it necessary to resign his position as instructor in electro-plating at the Newark Technical School. Mr. Morehouse was the first teacher of the electro-plating course and has held the position for eleven years. His resignation at the present time is due to the fact that the rapid growth of the business of the Newark Brass Plate Company now demands all of his time and attention.

Albert Jones, who has been assistant superintendent for some time at the Buffalo Copper and Brass Rolling Mills, Buffalo, N. Y., has been made superintendent in place of Jeremiah Howe who has resigned. The present officers of the Buffalo Copper and Brass Rolling Mills are: President, Robert S. Cox; vice-president, Franklin D. Locke; secretary and treasurer, Samuel Ellis. The mill is now manufacturing brass and copper sheet, rod, wire and tube.

W. D. Martin, of the American Brass Company, formerly located at The Waterbury Brass Goods Corporation, at Waterbury, Conn., has been transferred to the Kenosha, Wisconsin, plant of the American Brass Company. Mr. Martin is attached to the order and sales department and is a well-known factor in the brass business.

T. C. Eichstadt, until recently engaged as Western representative for the Hanson & Van Winkle Company, Newark, N. J., in the interests of their Universal polishing wheel, has become connected with the Oakland Motor Car Company, of Pontiac, Mich., as foreman of the polishing and plating departments.

Dr. Joseph W. Richards, professor of metallurgy, Lehigh University, South Bethlehem, Pa., sailed on June 11 for Dusseldorf, Germany, to attend the International Metallurgical Congress. This is only a flying trip, as Dr. Richards expects to be back in the United States before the middle of July.

T. P. Gourley, until recently Western representative of the J. B. Wise Manufacturing Company, Watertown, New York, manufacturers of the M. R. V. crucible tilting furnace, has become connected with the Rockwell Furnace Company, 26 Cortlandt street, New York, in a similar capacity.

H. B. Dow, formerly of the Winchester Repeating Arms Company force in New Haven, Conn., and who succeeded John H. Way as purchasing agent of the Waterbury Clock Company, is among the most popular officials connected with the Clock company. He has been here about two months.

One of the interesting facts about the recent annual election of the Waterbury, Conn., Y. M. C. A. officers was the choice of John H. Goss, of the Scovill Manufacturing Company for president, and Supt. William J. Larkin, of the Waterbury Clock Company, for vice-president.

G. L. Wallace, the former Eastern representative of the Dow Chemical Manufacturing Company, Mansfield, Ohio, is now in Bridgeport preparing to form a corporation for the manufacture of several of his inventions which he is at present developing and patenting.

Dr. W. A. Jones, general manager and chemist of the Celluloid Zapon Company, of New York and Stamford, Conn., has returned to duty after a three months' absence in the South, where he went for the recovery of his health. He is now very well.

Joseph Bullock, who has had charge of the polishing room of the Dundee Brass Manufacturing Company, Elmira, N. Y., has resigned his position to accept one as foreman of the polishing department of a large chandelier factory in New York City.

Frank P. Lund, for the past nine years general foreman of the Lumen Bearing Company, Buffalo, N. Y., is now connected with the recently organized Lundhaven Brass Foundry Company, and will act as works manager.

P. G. Smith, formerly connected with the Rockwell Furnace Company, of 26 Cortlandt street, New York, as Western representative, has become secretary of the J. D. Smith Foundry Supply Company, Cleveland, Ohio.

C. G. Drennen, formerly foreman plater for Rutherford Brothers, Muncie, Ind., has been appointed foreman of the chandelier department for the Empire Electric Power and Supply Company, Carthage, Mo.

C. W. Warner, of The Campbell-Warner Company, Middletown, Conn., makers of buckle tongues, sailed for Europe on June 9 to be gone until July.

J. R. Egan has accepted a position as foreman plater of the Cutler Mail Chute Company, of Rochester, N. Y.

J. L. Ashley, president of the International Nickel Company, has returned to New York from Europe.

#### PERSONNEL OF THE ALUMINUM COMPANY.

Alvah K. Lawrie, who has been identified for many years with the Aluminum Company of America, formerly the Pittsburgh Reduction Company, of Pittsburgh, Pa., has resigned and retired. Mr. Lawrie occupied the position of general sales agent and his first connection with the company was as manager of its Chicago office. He has decided to spend the remainder of his happy days at Williamstown, Mass., where he has a summer place. Edward K. Davis has become general sales agent in place of Mr. Lawrie.

The present officers of the Aluminum Company of America

are: President, Arthur V. Davis; first vice-president, Charles M. Hall; second vice-president, Alvah K. Lawrie; treasurer, Robert E. Withers; secretary, George R. Gibbons. It will be noted that Mr. Arthur V. Davis, who has been the general manager and active head of the company for many years, is now president, having succeeded Mr. R. B. Mellon, one of the owners of T. Mellon & Sons' bank, the financial interest connected with the company. Mr. Davis is very well known to every one engaged in the aluminum and metal industry.

Mr. Withers, the treasurer of the company, will spend the summer in Europe.

The other heads of the various departments of the company are as follows: Auditor, Edgar Hefley; chief engineer and purchasing agent, Edward S. Fickes; chief electrical engineer and head of research department, William Hoopes; chief chemist, Earl Blough; superintendent of plants, Niagara, Charles H. Moritz; Massena, Frederick A. Stoughton; Shawinigan, P. H. Falter; New Kensington, Roy A. Hunt; East St. Louis, C. B. Fox; Bauxite, John R. Gibbons.

It will be noted that Roy A. Hunt, a son of Captain Hunt, one of the founders of the business, is following in his father's footsteps, being superintendent of the new Kensington plant.

#### DEATHS

Edwin D. Paige, treasurer of the Paige Retort and Crucible Company, Taunton, Mass., died May 17, 1910, at his home in Taunton. Mr. Paige was an old-time crucible man and well known throughout the country for his connection with the graphite products business. He was for a number of years connected with the Taunton Crucible Company as salesman and manager, and under his management the business was very successfully and profitably conducted. He finally severed his connection with them and organized the Paige Retort and Crucible Company, 1907. He was elected treasurer of the corporation as well as business manager, which offices he held up to the time of his death. Mr. Paige was alone in the world with the exception of his sister, who is now the only one of the Paige family left.

Joseph M. Smith died at the age of fifty-two years in New York on June 10, 1910. Mr. Smith was a dealer in metals, and for many years had been connected with Hendricks Brothers, of New York City. Mr. Smith was very well known in the metal industry, and had been a member of the Twenty-second Regiment, National Guard, for twenty-two years. He is survived by his sister and by a brother, Major W. B. Smith, of the Old Guard.

Edward C. Hegeler, prominent zinc manufacturer of La Salle, Wis., died June 4, 1910, at his home, after a short illness, of pneumonia. He was a native of Germany, but had lived in La Salle since 1856. Mr. Hegeler was half owner of the Mathiesan & Hegeler Zinc Company, manufacturers of a number of well-known brands of spelter.

Robert H. Boggis, Cleveland, Ohio, died in that city June 10, after an illness of over three months. Mr. Boggis was at the time of his death president of the Taylor & Boggis Foundry Company of Cleveland, and was one of the most prominent foundry men in the city. He leaves two sons and one daughter.

The death of John H. Whittemore, of Naugatuck, Conn., which occurred May 28, removed one of the prominent figures in the State's financial and industrial circles and an extensive investor. Mr. Whittemore was reputed to be worth upwards of \$20,000,000 and gave largely to benevolences during his life.

J. Frank Dye, president and treasurer of the Newport Sand Bank Company, Newport, Ky., and for many years prominently identified with the molding sand industry, died May 19, 1910.

Eugene L. Richter, of the Eugene L. Richter Electric Company, Philadelphia, Pa., died recently. The affairs of the company are now being liquidated.





## Correspondence

BUSINESS REPORTS OF THE METAL INDUSTRY CORRESPONDENTS IN THE DIFFERENT INDUSTRIAL CENTERS OF THE WORLD.



### WATERBURY, CONN.

JUNE 20, 1910.

Business is good throughout the metal circle of the Naugatuck Valley, although the usual conditions for this season of the year are enabling the manufacturers to store their coal supplies and arrange their vacation schedules. Nearly every shop is running with full complement of help. Some have gone to five days a week for the summer season instead of the half holiday, but there is no dearth of orders and even the weaker lines seem to be holding up unusually well. Business, generally, is better by from ten to forty per cent. than last year, although collections are only fair.

Building is going on all around the Waterbury factories at a rapid pace while the shops themselves are contributing largely in this respect. The plant of the Scovill Manufacturing Company, which has been expanding at a remarkable rate, has not stopped yet and three new buildings are just being started. All will be one-story brick structures, one 72 x 100, one 34 x 62 and one 28 x 62, but two larger additions are contracted for, one of four stories and one of five. This company has added hundreds of thousands of square feet to its factory and storage capacity in the past eighteen months.

One of the thriving smaller concerns is branching out this spring. It is the Bristol Company, manufacturers of thermostatic instruments, gauges and the like, as well as some automobile fittings. An annex of three stories has been been contracted for as an addition to the plant at the south end of the city.

There have been rumors for several weeks of the removal of the Waterville Cutlery Company, which is located in this city, to Thomaston where a small knife shop, well situated, is finding the struggle for existence exhausting. Efforts to verify the rumors have brought prompt denials from the cutlery company, but it is known that negotiations for the acquisition of the Thomaston site have been in progress for some time. The Waterville company is prosperous.

One of the most interesting law suits in these parts recently is that of George H. Clowes, formerly of the Randolph-Clowes Company of this city, against John J. Albright, of Buffalo, N. Y., for damages of \$300,000 for failure to deliver stock to the company according to an agreement Mr. Clowes claims to have existed. Mr. Clowes is not now in the company. Decision will probably be given in a few days, but the case may go to the United States Supreme Court for settlement.

Another interesting law case, recently decided here, also concerned the company, the Randolph-Clowes Company. Charles E. Miller, one of the officers of the company, discharged Albert W. Erdman who sued for his salary for the balance of the year, claiming the position by right of verbal contract. Erdman was awarded damages of \$4,500, the full amount, but Miller has entered an appeal to the State Supreme Court.—F. B. F.

### PROVIDENCE, R. I.

JUNE 20, 1910.

A fair improvement in the jewelry industry has been noted during the past few weeks and conditions are expected to show still greater improvement in the near future. Many buyers from the West have been here and their orders have given a new lease of life to the manufacturers.

Manufacturing jewelers and metal workers in this city and Attleboro are taking an active interest in industrial education as a part of regular school work. So deep is that interest that attempts have been made to have official heads of school departments adopt some system in the schools by which boys may fit themselves in the public schools for life in the jewelry industry.

Jewelers who have given the present system of manufacture

of jewelry and novelties careful consideration have come to the conclusion that certain changes are necessary for the future welfare of the industry. It is declared that there are few of the old-time skilled jewelers at the bench at the present time and it is to teach the boys the fundamental principles of metal working that the new manual training work is advocated.

E. H. Elliott has sold his interest in the manufacturing jewelry plant of Elliott and Douglas at Norton, to the other members of the concern.

Business in jewelry in lines of goods for women has been especially bright recently. The season has not been auspicious in this class of trade but a change in weather would help considerably.

The bronze department of the Gorham Manufacturing Company has just turned out an equestrian statue of General George A. Custer for the State of Michigan. The figure is 14 feet 6 inches in height. It will stand in the centre of the village of Monroe, Michigan.

The Gorham Company was recently awarded the contract to make a tablet for School 11, Brooklyn, New York, to be established to the memory of LeRoy F. Lewis. Owing to the expansion of their business in bronzes the Gorham Company has decided to make provisions for the growth by the construction of a new building to be used exclusively for the setting up of these productions. The new building is to be 120 x 78 feet, one story in height, of brick, and in keeping with the general architectural beauty of the factories. In the silver branch of the works there has been finished and made ready for shipment a handsome silver service for the Battleship Delaware to be presented to the ship by the State of Delaware.

The Attleboro jewelry manufacturers are greatly interested in a petition which the Pawtucket Gas Company has filed with the town authorities of the former place, asking that the company be allowed to extend its gas mains to South Attleboro. The manufacturers of Attleboro believe the change would benefit them greatly.

Among the additions to jewelry plants in North Attleboro under contemplation is a considerable extension soon to be started by the F. M. Whiting Company next to their present factory on Broad street.

The Gilbreth Brown Company, manufacturing jewelers, has incorporated, with a capital stock of \$15,000. The plant will be in Providence. The incorporators are Gilbreth Brown, Louis H. Brown and W. Hunter Brown.

An addition is to be built to the factory of the Baird-North Company on Broad street. The contract has been awarded to E. H. Bigney of this city. The work will consist of an additional story, 75 x 200 feet, of brick, mill construction and gravel roof.—E. S. M.

### BRIDGEPORT, CONN.

JUNE 20, 1910.

Business has been somewhat quieter in the metal industry during the past month, with the exception of those concerns that contribute to the automobile output. The Aluminum Castings Company, of Fairfield, reports business excellent, and they are planning extensive additions to their plant.

The E. H. H. Smith Silver Company has completed a new fire-proof addition, into which they moved June 1. This concern made a decided departure a few months ago by engaging in the manufacture of artistic hollow-ware after their own designs, as well as the Sheffield type and other European styles. This ware is cut of substantial nickel silver, not the usual soft Britannia or pewter metal so much in general use. Orders already received have increased the number of their employees one-third. This concern is owned and controlled solely by Bridgeport capital and most of the employees live in this city.

There has been some unrest among the men in the shops and a few walk-outs have occurred, but fortunately in each instance the grievances were satisfactorily adjusted with but little loss of time.—E. L. H.

### PHILADELPHIA, PA.

JUNE 20, 1910.

General trade conditions here have improved to such an extent within the past thirty days that manufacturers and bankers venture to predict a constantly increasing business throughout the remainder of the year. Foreign orders are an important factor in this situation and those who produce parts for automobiles are compelled to run their establishments overtime to meet the demands of insistent buyers.

The convention of the Pennsylvania Retail Jewelers' Association, May 19 and 20, brought to Philadelphia nearly 300 of the leading jewelers and silversmiths of Pennsylvania, and the meetings proved to be the most important ever held by the organization. All of the officers were re-elected. Pittsburg was selected as the place for holding the next annual convention.

Those who furnish special metal parts for locomotives will be pleased to learn that the Baldwin Locomotive Works has booked orders for 50 new locomotives.

Charged with obtaining copper, solder and other metals of value from dealers on forged orders, Thomas Connolly has been held for court with John Orfs, an alleged accomplice. The two young men were arraigned and stoutly denied the many charges against them. The scheme used by those who secured the metal was particularly ingenious. They secured letter heads from firms in good credit out of waste baskets or elsewhere and by dissolving out the original writing thereon with acids used the sheets for perpetrating the forged orders. Both Connolly and Orfs declare that they have no knowledge as to where the orders came from or who forged the orders. The police assert that they will be able to fasten the serious charges upon these prisoners.

While breaking up several pieces of metal before smelting, Jacob Bilerlmier, a dealer, of No. 1213 Wood street, struck a cartridge which had become mixed with the metals and the bullet lodged in his hand. His wound was dressed at Hahnemann Hospital. No serious results are anticipated.

Mr. John Baird, president of the Hayes Mechanics Home, a most worthy charity, established by Joseph Hayes, a silversmith, is in need of funds. Sixty-five mechanics, most of them metal workers, are enjoying the hospitalities of the home.—C. H. C.

### BUFFALO, N. Y.

JUNE 20, 1910.

A bronze tablet and boulder have been prepared at Niagara Falls, by McDonnell & Sons, of Buffalo, in honor of Father Hennepin, the first white man who saw Niagara Falls. The memorial was recently unveiled by the Knights of Columbus of Buffalo and other cities.

It is reported that the capital stock of the Carborundum Company, of Niagara Falls, will be increased from \$600,000 to \$2,000,000 to provide for increases of the plant, necessary to take care of the immense business developed during the last few years.

The Jewell Steel & Malleable Company, which will manufacture copper, iron, steel and wood materials, has been incorporated in Buffalo. The capital is to be \$50,000, and the company will begin business with \$40,000. The directors are Walter E. Jewell, of North Tonawanda, and Allen W. Valentine and Bessie Knox of this city.

Among those who attended a recent convention of credit men in New Orleans was C. F. Smith, credit man for King & Eisele, manufacturing jewelers of Buffalo.

The Automatic Arms Company, which will engage in the manufacture of automatic firearms, has been incorporated in Buffalo. The concern is capitalized at \$100,000, but business will be begun with \$500 capital. The directors are George R. Klahs, Fred. W. Ely, James E. McAlpine, Ellis H. Gridley, John B. Richards and J. C. Obersheimer.

The Lobee Pump & Machine Company, of Buffalo, will build a brick and steel machine shop in this city at a cost of \$10,000.

A. B. Gamlar, a Corning, N. Y., jeweler, has bought the jewelry business of A. & R. Bergman, of Buffalo.

Many homes will be built in Lockport, N. Y., to accommodate a number of workmen of the Symonds Manufacturing Company, which recently removed to that city.

Three miles of copper wire was recently stolen from the New York Telephone & Telegraph Company, in Buffalo. Much of the wire was recovered.

According to State Geologist, John M. Clark, at Albany, the graphite mines of New York State in the past year produced 2,342,000 pounds, a gain of 400,000 pounds over the previous year.—J. A. M.

### DETROIT, MICH.

JUNE 20, 1910.

No material change has been noted in the brass industry in Detroit during the past month. Factories have been running about the same as during the preceding month and the output has been about the same. New men are being taken on at all the brass factories. This is especially true in the automobile plants where the demand for brass products is heavy.

Among the manufacturers of brass goods that are making rapid strides these days is the American Brass and Iron Company, located at Crystal and Trombly avenues. Its business is so brisk that it is having trouble securing all the help it wants.

The Rose Stephens Manufacturing Company, which corporation recently lost its plant in West Detroit by fire, is already at work on a new industrial home, a permit being taken out recently for the construction of a \$10,000 building.

The Rotary Valve Motor Company has recently been incorporated for the purpose of manufacturing engines and appliances of all sorts. The capitalization is \$100,000. The incorporators are Charles D. Hastings, William Ducharme, Emil A. Nelson and John A. Peterson.—F. J. H.

### CLEVELAND, OHIO.

JUNE 20, 1910.

Manufacturers and dealers in metal goods in this territory are complacently satisfied with the business outlook and with the past month's record. Despite the temporary lull in some lines of business during the past month nearly all the local concerns report a big output and a strong demand for goods for summer delivery.

Business with the brass founders is particularly good. Those concerns handling brass and copper plumbing goods are working to capacity and a number are making additions to their plants in the shape of new buildings and equipment.

One new brass concern has been launched in Cleveland during the past month. The Crescent Brass Manufacturing Company, of Cleveland, was incorporated at Columbus, O., with a capitalization of \$10,000, to engage in a general brass manufacturing business. The incorporators are Charles H. Hufriechter, William J. Luck, E. G. Strub, John W. Bowles and William E. Patterson.

Word comes from the various aluminum factories that business could not be better. There is a strong demand for aluminum castings for automobiles and the newest industry, that of aeroplanes, is causing a demand in a new field hitherto unknown. Glenn Curtiss, the aviator who made the flight from Albany to New York a few days ago, gets all the aluminum castings for his machinery and planes from a Cleveland aluminum company.

That the brass business must be prospering is indicated by the purchase by Morris H. and Joseph H. Glauber, of the Glauber Brass Manufacturing Company, of the former home of ex-Mayor Tom L. Johnson of this city, at a cost of \$195,000. The lot is on Euclid avenue, corner of East 24th street and in one of the most exclusive residence sections of the city. The land has a frontage of 130 feet on Euclid avenue and a depth of 520 feet on East 24th street. It contains a palatial stone mansion until recently inhabited by the Johnson family. The Glaubers bought the property as an investment. It is intended to turn the mansion into a clubhouse for social organization and build a three-story mercantile building on the front lawn. Considerable space has already been leased in it to automobile concerns. The Glaubers but recently purchased another Euclid avenue site which cost them \$120,000. They intend to erect an eight-story building thereon within the next year. They say that business at their big factory in the East End has never been better.—McM.





# TRADE NEWS

TRADE NEWS OF INTEREST DESIRED FROM ALL OF OUR READERS. ADDRESS  
THE METAL INDUSTRY, 99 JOHN STREET, NEW YORK  
Additional Trade News will be found under "Correspondence."



The Rockwell Silver Company, of Meriden, Conn., will immediately begin the erection of a two-story concrete addition, 27 by 32 feet.

A building permit has been issued to the Crane Company, Chicago, for a four-story brass foundry, 1230-1248 Canal street. The estimated cost is \$90,000.

The Jonathan Bartley Crucible Company, of Trenton, N. J., have opened an office in Room 908, Commonwealth Building, Pittsburg, Pa. W. E. Howard, manager.

The new building now being erected for E. L. LeBaron's Foundry, Campello, Mass., will soon be finished and the officials expect to get out the first heat of metal on June 28.

The A. G. Fries Plating Company, of Buffalo, N. Y., announce that they are now doing electro-galvanizing besides their regular line of plating. They have a new shop and equipment.

A plating plant has been installed in the new Hotel Breslin, Mt. Arlington, N. J., under the supervision of Joseph Dimes. The equipment was furnished by the Zucker & Levett & Loeb Company, New York.

The Spargo Wire Cloth Company, of Rome, N. Y., is increasing its plant and will put in 40 more looms. A cut of this plant and its process for the manufacture of cloth was described in THE METAL INDUSTRY of March, 1910.

The Yates-Upholt Brass Company, which recently located at Plymouth, Mich., are now running to full capacity and have already outgrown their new factory building and contemplate adding to their space at an early date.

The R. C. Heater Company, 135 West 26th street, New York City, manufacturers of chandeliers, have installed a plating plant, the equipment of which was furnished by the Hanson & Van Winkle Company, of Newark, N. J.

The equipment of the Ontario Brass and Copper Company, Toronto, Canada, which recently made an assignment, has been sold to the Crown Electrical Manufacturing Company. They intend to move it to their new plant at Brantford, Ontario.

The Springfield Foundry Company, Springfield, Mass., have acquired 10 acres of land in Indian Orchard, Mass., and it is probable that new foundry buildings will be erected there before next winter. The company is now considering the plans of the new buildings.

The firm of Helmer Brothers has been organized and is doing business at 215 S. Wyman street, Rockford, Ill. This company consists of Frank and Fred Helmer and do electroplating in gold, silver, nickel, brass and copper and all kinds of oxidizing and lacquering.

The Cottrell Foundry Company, Dover, N. J., commenced operations some time ago and is now doing a good business in brass, composition and aluminum castings. James F. Cottrell, who is a practical foundryman of many years experience, is the manager.

Benj. Middleditch, of Detroit, Mich., a manufacturer of brass foundry equipment is now building a new foundry, 60 x 120, of brick and steel at 97 Meldrum street, near his present shop. Besides brass foundry equipment Mr. Middleditch makes quantities of gas engine castings.

The North and Judd Manufacturing Company, of New Britain, Conn., has awarded the contract for additions to its plant. The plans call for an addition, 60 by 105 feet, to the brass foundry, and an addition, 70 by 94 feet, to the annealing department. Both structures will be of brick.

The S. Obermayer Company, manufacturers of foundry facings, supplies and equipment, of Cincinnati, Chicago and Pittsburg, have furnished a complete foundry equipment for the battleship Dixey. This portable foundry was installed on this battleship so that all necessary repairs can be made when at sea.

The Lundhaven Brass Foundry Company has been organized at 41-45 Letchworth street, Buffalo, N. Y., under the management of Frank P. Lund, late superintendent of the Lumen Bearing Company, Buffalo. This company will do a general brass foundry business, making a specialty of manganese bronze castings.

Contracts for furnishing all the bleak lead crucibles that may be required by the United States Assay office, New York, during the coming fiscal year have been awarded the Joseph Dixon Crucible Company, Jersey City, N. J., J. H. Gautier & Company, Jersey City, N. J., and the Waterbury Crucible Company, Waterbury, Conn.

The International Acheson Graphite Company have established the following branch offices: Room 511, West Street Building, New York; 457 Monadnock Block, Chicago, Ill.; and 309 Fourth avenue, Pittsburg, Pa. By means of these offices the company will aim to care for its growing business in the various sections of the country.

The Patented Machines Manufacturing Company, of Bridgeton, N. J., are working on plans for a modern brass foundry which will be shortly erected. This company manufactures foot power pie crimping and trimming machines, which is anticipated will require considerable in the way of brass castings and brass spinings.

The Edward Winan Manufacturing Company, Milwaukee, Wis., has put on the market an acid, water and oilproof apron for the use of platers. This apron is said to be softer and more pliable than waxed cloth and is tough as leather. It is guaranteed to outwear four ordinary aprons and to cost less and wear better than rubber aprons.

The Waclark Wire Company, of Elizabeth, N. J., manufacturers of copper wire, are building a new addition to the wire mill and shipping department. This addition will be 40 by 100 feet, and will be devoted to the shipping department. The company has also installed two new electric generators, which considerably increases the power of the plant.

The Muncie Plating Works, Muncie, Indiana, have recently completed a new retail store for their jewelry department and a plating plant in connection therewith. They state that they have contracts with two automobile supply houses that will keep their new plating department busy on brass plating, and they also make a line of high-grade silverware which they market themselves.

The Electric Smelting and Aluminum Company, of Lockport, N. Y., are putting in a new fireproof vault, 8 x 13 feet, which will contain all of their records, many of which are extremely valuable, relating to patents on electro-chemistry. The company has just rounded out a quarter of a century in the manufacture and sale of silicon copper, an alloy used for making solid copper castings.

Noonan's Tool and Machine Works is the title of a new shop located alongside the Erie Canal at Rome, N. Y. It will contain a brass foundry, machine shop, plating and buffing room and takes the place of the former shop of W. J. Doyle who has had a brass foundry and finishing shop in Rome for a number of years. A. S. Noonan and W. J. Doyle are the principals in the new enterprise.

The E. Ingraham Company, of Bristol, Conn., manufacturers of clocks and clock cases, has given out the contract for the erection of an additional four-story brick structure, 60 by 75 feet. It will be used in part for manufacturing purposes and in part for a storehouse. The New Departure Manufacturing Company, of the same town, is extending its plant to the land which it recently acquired on Valley street.

The published reports that a mammoth brass mill is being built by the Scovill Manufacturing Company, of Waterbury, Conn., which it is claimed will be the largest factory of its kind in the State, is officially denied by the parties interested. Some additions and small buildings, which are in course of erection by the Scovill Manufacturing Company, undoubtedly gave rise to the rumors which finally crystallized into definite reports.

Proposals will be received at the Bureau of Supplies and Accounts, Navy Department, Washington, D. C., until 10 o'clock a. m., July 5, 1910, to furnish at the navy yard, Mare Island, Cal., a quantity of naval supplies, as follows: Schedule 2601, copper wire, electrical supplies; Schedule 2602, brass and copper; Schedule 2604, white lead and white zinc; Schedule 2605, brass, pipe covering, etc. Blank proposals may be obtained from the Bureau.

The D. H. Stoll Company, of Buffalo, N. Y., will by the middle of July move into their new shop, 150 x 60, a two-story brick, steel and concrete building, with electric cranes and other modern appliances. This will give the company twice the floor space of their old works. They manufacture power presses and power squaring shears. They are now occupying the office of their new plant which is situated on Lansing street near Military road.

The Aluminum Castings Company, of Cleveland, Ohio, announce that they have bought the plant of the Aluminum Foundry Company, of Manitowoc, Wis., and will run this foundry in connection with their other shops in various parts of the country. This makes the seventh foundry acquired by the Aluminum Castings Company, whose specialty is aluminum automobile castings. The other works absorbed by this company have been mentioned several times in THE METAL INDUSTRY.

A new foundry for brass and iron is well under way at Laconia, N. H. This foundry will be of substantial construction, large capacity and up to date in every way, and it is expected to be in operation early in the summer. James McLoughlin is the owner of this foundry and he also manufactures the McLoughlin Positive Friction Clutch, which is claimed to be the best of its kind. Information regarding the clutch may be obtained by writing direct to James McLoughlin, Laconia, N. H.

The Oxford Tripoli Company, Ltd., 11 Broadway, New York, who for fifteen years have been refining and manufacturing Tripoli into a fine and impalpable powder, commercially known as fossil flour, are prepared to furnish this material on short notice. They have a large mill at Bass River, Nova Scotia, and a warehouse in Portland, Me. David S. Collins, the president of the company, makes his headquarters at the New York office and will be glad to have any persons interested in Tripoli communicate with him regarding the product which his company manufactures.

Thomas Paulson & Son, now located at 13 Fulton street, Brooklyn, N. Y., have had plans prepared for a new foundry building 40 by 88 feet, and are ready to consider designs and bids for the complete equipment that will be required. Among the items to be purchased will probably be melting furnaces,

power sprue cutters, grinders, molding machines, trolley system, oil engine and air compressors. This is a jobbing foundry making copper, aluminum, brass, composition and zinc castings for all purposes. Wm. E. Paulson, M.E., is in charge of the new building and installation of the equipment.

Commencing June 1 all the brass and iron foundries in Hartford, Conn., with the exception of the Hartford Foundry Corporation and the Standard Foundry Company, began operating on the open shop principle. This action followed a request from the International Molders' Union, Local No. 73, for an increase in pay to molders and coremakers from \$3.00 to \$3.50 per day. No threat accompanied the request and the men went to work as usual after the notices were posted. The brass founders affected are as follows: The Whitlock Coil Pipe Company, John M. Craig, J. W. Conway, James L. Howard and E. J. Blake.

The Slade Tubing Company of Rome, N. Y., announce that on and after July 1, 1910, their corporate name becomes the Rome Hollow Wire and Tube Company. There will be no change in the management or policy of the company in the manufacture of their product, which is small sized brass and copper tube. They also make a specialty of lightning wire. The officers of the company are: F. J. De Bisschop, president and general manager; James Spargo, vice-president; F. M. Shelly, secretary and treasurer. They are incorporated under the laws of the State of New York, with a capital of \$50,000, and occupy the former factory of the Spargo Wire Company at Rome.

William H. Nicholls, 30 Church street, New York, has recently furnished foundry equipment to a number of large concerns, as follows: Westinghouse-Church-Kerr Company, New York, one large Berkshire automatic molding machine with pattern plates and flasks, tumbling barrels, wire straighteners, etc.—these are for a new brass foundry, which is being installed for the Chesapeake & Ohio Railroad; E. C. Stebbins Manufacturing Company, 12 large Berkshire squeezers to replace 12 of their brass molders tubs; The Eagle Brass Manufacturing Company, Carlstadt, N. J., four Berkshire molding machines, pattern plates, flasks, tumbling barrels, sprue cutters, etc., for their new brass manufacturing plant.

An Industrial Exposition of Home Products is to be given under the auspices of the Detroit Board of Commerce at Detroit, Mich. This exposition will cover a period from June 20 to July 6, and will be started in motion by President Taft. The committee in charge consists of 275 leading manufacturers, representing a capital of \$150,000,000, and the plans have been made on a liberal scale. It is estimated that the total value of the exhibits will exceed \$1,000,000, and it is Detroit's claim that its exhibition will be one of the largest of its kind ever conducted. The exhibition will include an automobile show, a food show, a machinery display, a furniture exhibit, an electrical show, and interesting exhibits of other lines of production.

## REMOVALS

The Hawley-Down Draft Furnace Company have located their office in the People's Gas Building, corner Michigan Boulevard and Adams street, Chicago, Ill.

The U. S. Reduction Company, formerly located at 56 Law avenue, Chicago, Ill., have moved their offices to 505 Manhattan Building. The U. S. Company's works are located at East Chicago, Ind.

The old building at the corner of Pearl street and Burling Slip, New York, where the Metal Exchange has been located for nearly thirty years, has been sold by the board of managers of the exchange to the United States Realty Company for \$50,000 and the exchange takes a lease on quarters in the Realty Company's building, 111 Broadway, for ten years, at an annual rent of \$4,200. The old building will be torn down to make room for a modern structure.



## FIRES

We are informed by the Art Metal Works, of Newark, N. J., which recently sustained a very serious fire that they had some departments working on the day following the fire and now look forward to resumption of work in all the departments in a very few days, and they therefore will be in a position to take care of their rapidly increasing business in better shape than before.

## INCORPORATIONS

Business organizations incorporated recently. In addressing them it is advisable to include also the names of the incorporators and their residence. Particulars of additional incorporations may frequently be found in the "Correspondence" columns.

KNICKERBOCKER BRASS GOODS COMPANY, New York. Capital stock, \$50,000. To manufacture and deal in brass goods. Incorporators: E. J. Forhan, J. J. Harper, G. F. Martin, all of 154 Nassau street.

CHICAGO-RACINE ALUMINUM BRASS AND IRON WORKS. Capital stock, \$16,000. To manufacture metal specialties, machinery and devices. Incorporators: Elmer E. Jackson, Clyde C. Colwell, Cyrus H. Adams, Sr., all of Chicago.

HICKS-JOHNSON COMPANY, INC., West Hoboken, N. J. Capital stock, \$100,000. Tool makers, brass founders, metal workers, etc. Incorporators: G. C. Hudson, Highland Falls, N. Y.; A. C. Carsten, Hoboken, N. J.; F. H. McCauley, West Hoboken, N. J.

## INCREASE OF CAPITAL STOCK

The Detroit Copper & Brass Mills, manufacturers of copper and brass products, have increased their capital stock from \$1,500,000 to \$2,000,000.

The Turner & Seymour Manufacturing Company, of Torrington, Conn., manufacturers of hardware, has filed a similar certificate, increasing its capitalization from \$100,000 to \$250,000.

The French Manufacturing Company, of Waterbury, Conn., makers of tubing and brass goods, has filed a certificate of its action in increasing its capital stock from \$25,000 to \$50,000. A programme of expansion will be carried out.

## REORGANIZATIONS

The John T. Lewis & Bros. Company, of Baltimore, Maryland, have succeeded to the business of A. Schultz & Co., manufacturers of solder, babbitt, type and stereotype metals and dealers in pig tin, pig lead, spelter and antimony.

The Buckeye Foundry Company, of Cincinnati, Ohio, has been reorganized with a capital of \$150,000, with the following officers: William Gilbert, president; William Gilbert, Jr., vice-president; Albert E. Denison, secretary and treasurer.

## ELECTIONS

At the annual meeting of the stockholders of the Joseph Dixon Crucible Company, the old board consisting of Geo. T. Smith, William Murray, William H. Corbin, Edward L. Young, Geo. E. Long, William H. Bumsted and Harry Dailey, were unanimously re-elected. The board of directors re-elected the former officers, namely, Geo. T. Smith, president; William H. Corbin, vice-president; Geo. E. Long, treasurer; Harry Dailey, secretary; J. H. Schermerhorn, assistant treasurer and assistant secretary. William H. Corbin was also re-elected as counsel. The stockholders present expressed themselves as thoroughly satisfied with the management of the company by its officers. Of the total number, 10,000 shares, there were represented 8,856 shares.

## PRINTED MATTER

PAINTS AND LACQUERS.—The American Lacquer Company, Bridgeport, Conn., have issued a very handsome catalog giving information regarding their Bridgeport bronze paint and their lacquer aluminum paint as well as a number of other varieties of paint manufactured by them. This booklet may be obtained upon request.

THE SANGAMO ELECTRIC COMPANY, Springfield, Ill., has issued an unusually well-gotten-up pamphlet in the interests of their ampere hour meter for use on electric vehicles. The pamphlet is illustrated with high-class engravings on tinted paper and presents useful information concerning their meters. The same concern also issued a striking bulletin relating to the N. E. L. A. convention, recently held at St. Louis, Mo. This was also a fine and attractive piece of advertising matter and ought to interest any one who uses ampere hour meters.

## CATALOGUE EXHIBIT

An exhibition of every kind of catalogues may be seen at THE METAL INDUSTRY office, 99 John street, New York. THE METAL INDUSTRY is prepared to do all of the work necessary for the making of catalogues, pamphlets, circulars and other printed matter. Estimates will be furnished for writing descriptions, making engravings, printing, binding, for the entire job from beginning to end or any part of it.

## AD NEWS

The Buckeye Products Company, Cincinnati, Ohio, show in this month's advertisement how the foundryman can keep cool during the hot weather.

The Campbell-Warner Company, Middletown, Conn., are advertising their buckle tongues, which are made in the English fashion, from any metal.

The Cleveland Blow Pipe and Manufacturing Company, Cleveland, Ohio, invite attention to their dust collectors, exhaust heads, heating and ventilating apparatus.

Lewis Thompson & Company, Philadelphia, Pa., make a special grade of mahogany pattern lumber, which they furnish as cheap as white pine. Particulars may be obtained from their advertisement.

The Flexible Abrasive Wheel Company, Newark, N. J., make the initial announcement on another page of their new flexible emery grinding and polishing wheel. This wheel represents a revolution in the designing of grinding wheels.

The Niagara Alkali Company, Niagara Falls, N. Y., are advertising electrolytic caustic potash, liquid and solid, of which they are the sole American manufacturers. They also make muriatic acid, 18 to 22 degs., free from sulphur and arsenic.

Kelley & Young, Bakewell Building, Pittsburg, Pa., announce in their advertisement that by using their process of silver and nickel plating a saving of 50 to 75 per cent. can be effected in cost and, besides, a more durable and better appearing finish can be obtained.

The Thomas W. Pangborn Company's advertisement on the front cover features their well-known sand blasts and foundry equipment which has been supplied to many prominent foundries throughout the country. The company's main office is at 89 West street, New York.

The Levett Manufacturing Company, who have become well known to the plating trade as manufacturers and dealers in electroplaters' supplies and polishing materials, have a new advertisement in this issue, calling attention to some of their specialties. The company's main office is at 407 Canal street, New York, and their works are at Matawan, N. J.

Guterman, Rosenfeld & Co., 35 South William street, New York, who advertise as dealers in aluminum, report that they have taken a large order for metal from the McCrum-Howell Company, of Richmond, to be used for a suction cleaner. They also report that they believe there is likely to be a curtailment in the foreign supply of aluminum owing to a strike in the works of the Anglo-Norwegian Aluminum Company of Norway.

Davenport & Keeler, New Britain, Conn., whose card appears in this issue, is the name of a new firm which has just entered the field of technical analyses of all kinds of foundry material, metals, alloys and similar products. Mr. Davenport has been city chemist of New Britain, Conn., and in charge of the water supply and filtration plant there for fifteen years. Mr. Keeler has had wide experience in all kinds of foundry work and factory problems, having been in charge of important work for concerns such as the Lackawanna Steel Company, Buffalo, N. Y.; Carpenter Steel Company, Reading, Pa.; General Electric Company, Lynn, Mass., and the Hartford Laboratory Company, Hartford, Conn. Both of these gentlemen are graduate chemists.

### COPPER PRODUCTION

(Issued by the Copper Producers' Association.)

	June 8, 1910.	Pounds.
Stocks of marketable copper of all kinds on hand at all points in the United States, May 1, 1910....	141,984,159	
Production of marketable copper in the United States from all domestic and foreign sources during May, 1910 .....	123,242,476	
	265,226,635	
Deliveries:		
For domestic consumption .....	59,305,222	
For export .....	45,495,440	
	104,800,662	
Stock of marketable copper of all kinds on hand at all points in the United States, June 1, 1910....	160,425,973	
Stocks increased during the month of May .....	18,441,814	

### METAL MARKET REVIEW.

NEW YORK, JUNE 20, 1910.

**COPPER.**—The price of standard copper in London shows a net advance for the month of about £1 per ton. The foreign visible supply of copper decreased during the month, 3,450 tons.

The New York market for Lake copper is about the same as a month ago, namely, dull at 13 cents, the price of Electrolytic today is about ¼ cent higher, and the price of casting grades are about 20 points higher. There was a fair demand during the early part of the month and prices were advanced nearly half a cent above the closing, but the demand did not hold and prices eased off slightly. With the decline in Wall Street and the distrust generally with the Washington government it is a wonder that copper has held as steady as it is today. The market today is controlled by the Amalgamated crowd and they are asking full prices. The surplus copper is being well taken care of and the market continues fairly steady. The exports for the month were 20,832 tons against 13,062 tons in April and 31,473 tons the same month a year ago. The association figures will be published on the 8th of the month and a further increase in stocks is looked for. Lake today, 12.75 cents; Electrolytic, 12.50 cents; Casting, 12.40.

**TIN.**—The London tin market shows a net decline for the month of about 10s. per ton. The trading has been dull and the fluctuations comparatively slight.

In the New York market the consumption for the month was 3,600 tons, the total for the five months shows an increase of 1,900 tons compared with the same period last year. The price today is about the same as a month ago, 32.65 to 32.70 for 5-10-ton lots spot.

**LEAD.**—The foreign lead market holds steading at around £12 10s.

The lead market in New York has held very steady and prices are about the same as a month ago. Prices during the month

sagged off about 5 points, but at the close of the market is steady again. New York carload lots, 4.40 to 4.45; East St. Louis, 4.15 to 4.20.

**SPELTER.**—The foreign spelter market is a trifle better at £22 7s. 6d. against £22 a month ago.

The New York spelter market is more or less controlled by the combination and spot spelter has been held at around 5.25 while shipment from the West has been obtainable at 5.10 to 5.15 according to deliveries required. In East St. Louis the market is dull at 5.00 to 5.05.

**ALUMINUM.**—The market is steady at around 23 to 23¼c. for 98-99 per cent. pure imported ingots, in 1 to 5-ton lots. Smaller lots from 24 to 25 cents.

**ANTIMONY.**—The foreign market holds steady at £30 for Hallett's and £29 for ordinary brands.

The New York market has been very dull at 8¾ for Cookson's, and around 8½ for Hallett's. Chinese antimony has been freely offered and is rapidly being introduced in this market. The craze for certain high-priced antimony is on the wane and the name alone does not sell as well as some years ago.

**SILVER.**—The foreign silver market has fluctuated during the month between 24 15/16d. and 24½ d. and closes at 24½d.

In New York the market has declined from 54¼c. at the opening to 53¼c. at the close.

**QUICKSILVER.**—The foreign market is easier at £8 15s. to £8 12s. 6d.

In New York the wholesale price has been reduced to \$47 per flask with jobbing lots at \$48 to \$48.50.

**PLATINUM.**—The market is quiet and unchanged at around \$32 per ounce for hard and \$31 for ordinary. Scrap is worth \$29 per ounce.

**SHEET METALS.**—There has been no change in the price of sheet brass or copper. The base price of sheet copper stands at 18 cents, with wire at 14¼, seamless brass tubing, 18 cents, copper tubing, 22 cents, base and sheet brass at 14 cents.

**OLD METALS.**—Prices today are from 25 to 50 cents lower and the market is dull and unsettled. Consumers are holding off and it is hard work to make a sale.

### THE MAY MOVEMENTS IN METALS

	Highest.	Lowest.	Average.
<b>COPPER .</b>			
Lake .....	13.20	12.90	13.00
Electrolytic .....	12.95	12.50	12.70
Casting .....	12.90	12.40	12.65
<b>TIN .....</b>	33.60	32.75	33.20
<b>LEAD .....</b>	4.45	4.40	4.45
<b>SPELTER .....</b>	5.40	5.40	5.40
<b>ANTIMONY (Hallett's) .....</b>	8.37	8.37	8.37
<b>SILVER .....</b>	54¼	53½	53.87

### WATERBURY AVERAGE

The average price of lake copper per pound as determined monthly at Waterbury, Conn.

1909.—Average for year, 13.416. 1910.—Jan. 13¾. Feb. 13¾. March 13¾. April 13¾. May 13.

### INFORMATION BUREAU

Any firm intending to buy metals, machinery or supplies and desiring the names of the various manufacturers and sellers of these products can obtain the desired information by writing to THE METAL INDUSTRY. Commercial questions are answered by return mail. Our Information Bureau is for the purpose of answering questions of all kinds. Address THE METAL INDUSTRY, 99 John street, New York.

### INQUIRIES AND OPPORTUNITIES

Under our directory of "Trade Wants" (published each month in the back advertising pages), will be found a number of inquiries and opportunities which, if followed up, are a means of securing business. Our "Trade Want Directory" fills wants of all kinds. See Want Ad pages.



ZINC—Dry, sheet, 1% c. per lb.	Cents per lb.
Carload lots, standard sizes and gauges, at mill.....	7.50 less 8%
Casks .....	8.00
Open casks .....	8.50

# Metal Prices, June 20, 1910

## PRICES ON BRASS MATERIAL—MILL SHIPMENTS.

In effect May 2, 1910, and until further notice.

To customers who purchase less than 40,000 lbs. per year and over 5,000 lbs. per year.

	Net base per lb.		
	High Brass.	Low Brass.	Bronze.
Sheet	\$0.13½	\$0.15	\$0.17
Wire	.13½	.15	.17½
Rod	.13½	.15	.18½
Brazed tubing	.18	—	.20½
Open seam tubing	.16½	—	.18½
Angles and channels, plain	.16½	—	.18½

50% discount from all extras as shown in American Brass Manufacturers' Price List No. 7.

### NET EXTRAS FOR QUALITY.

Sheet—Extra spring, drawing and spinning brass...	½c. per lb. net advance
—Best spring, drawing and spinning brass...	1½c. " " " "
Wire—Extra spring and brazing wire...	½c. " " " "
—Best spring and brazing wire...	1c. " " " "

To customers who purchase less than 5,000 lbs. per year.

	Net base per lb.		
	High Brass.	Low Brass.	Bronze.
Sheet	\$0.14½	\$0.16	\$0.18
Wire	.14½	.16	.18½
Rod	.14½	.16	.19½
Brazed tubing	.19	—	.21½
Open seam tubing	.17½	—	.19½
Angles and channels, plain	.17½	—	.19½

5% discount from all extras as shown in American Brass Manufacturers' Price List No. 7.

### NET EXTRAS FOR QUALITY.

Sheet—Extra spring, drawing and spinning brass...	½c. per lb. net advance
—Best spring, drawing and spinning brass...	1½c. " " " "
Wire—Extra spring and brazing wire...	½c. " " " "
—Best spring and brazing wire...	1c. " " " "

## BARE COPPER WIRE—CARLOAD LOTS.

14.25 per lb. base.

## SOLDERING COPPERS.

300 lbs. and over in one order	18½c. per lb. base.
100 lbs. to 300 lbs. in one order	19c. " " "
Less than 100 lbs. in one order	20½c. " " "

## PRICES FOR SEAMLESS BRASS TUBING.

From 1¼ to 3¼ in O. D. Nos. 4 to 13 Stubbs' Gauge, 18c. per lb.  
Seamless Copper Tubing, 22c. per lb.

For other sizes see Manufacturers' List.

## PRICES FOR SEAMLESS BRASS TUBING Iron Pipe Sizes.

Iron Pipe Size	¾	1	1¼	1½	2	2½	3	3½	4	4½	5	6
Price per lb.	26	25	20	19	18	18	18	18	18	10	20	24 25

## PRICE LIST OF IRON LINED TUBING—NOT POLISHED.

	Per 100 feet—	
	Brass.	Bronze.
¾ inch	8	9
1 inch	10	11
1¼ inch	12	13
1½ inch	14	15
2 inch	18	20
2½ inch	22	24
3 inch	25	27
3½ inch	32	35
4 inch	45	48
5 inch	56	60

Discount 45 and 5%.

## PRICES FOR MUNTZ'S METAL AND TOBIN BRONZE.

Muntz's or Yellow Metal Sheathing (14" x 48")	15c. net base
Rectangular sheets other than	16½c. " "
Sheathing	14½c. " "
Rod	16c. " "
Tobin Bronze Rod	16c. " "

Above are for 100 lbs. or more in one order.

## PLATERS' METALS.

Platers' bars in the rough, 22½c. net.  
German silver platers' bars dependent on the percentage of nickel, quantity and general character of the order.  
Platers' metal, so called, is very thin metal not made by the larger mills and for which prices are quoted on application to the manufacturers.

## PRICES FOR SHEET BLOCK TIN AND BRITANNIA METAL.

Not over 18 in. in width, not thinner than 23 B. S. Gauge, 2c. above price of pig tin in same quantity.  
Not over 25 in. in width, not thinner than 22 B. S. Gauge, 3c. above price of pig tin.

## PRICE SHEET FOR SHEET ALUMINUM—B. & S. Gauge.

No.	Wider than and including	in coils.															
		3in.	6in.	14in.	16in.	18in.	20in.	24in.	30in.	36in.	40in.	42in.	44in.	46in.	48in.	50in.	52in.
13 and heavier	12in.	34	34	36	36	36	36	36	39	39	39	39	39	39	39	39	39
14	14in.	34	34	36	36	36	36	36	39	39	39	39	39	39	39	39	39
15	16in.	34	34	36	36	36	36	36	39	39	39	39	39	39	39	39	39
16	18in.	34	34	36	36	36	36	36	39	39	39	39	39	39	39	39	39
17	20in.	34	34	36	36	36	36	36	39	39	39	39	39	39	39	39	39
18	24in.	34	34	36	36	36	36	36	39	39	39	39	39	39	39	39	39
19	30in.	34	34	36	36	36	36	36	39	39	39	39	39	39	39	39	39
20	36in.	34	34	36	36	36	36	36	39	39	39	39	39	39	39	39	39
21	40in.	34	34	36	36	36	36	36	39	39	39	39	39	39	39	39	39
22	42in.	34	34	36	36	36	36	36	39	39	39	39	39	39	39	39	39
23	44in.	34	34	36	36	36	36	36	39	39	39	39	39	39	39	39	39
24	46in.	34	34	36	36	36	36	36	39	39	39	39	39	39	39	39	39
25	48in.	34	34	36	36	36	36	36	39	39	39	39	39	39	39	39	39
26	50in.	34	34	36	36	36	36	36	39	39	39	39	39	39	39	39	39
27	52in.	34	34	36	36	36	36	36	39	39	39	39	39	39	39	39	39
28	54in.	34	34	36	36	36	36	36	39	39	39	39	39	39	39	39	39
29	56in.	34	34	36	36	36	36	36	39	39	39	39	39	39	39	39	39
30	58in.	34	34	36	36	36	36	36	39	39	39	39	39	39	39	39	39
31	60in.	34	34	36	36	36	36	36	39	39	39	39	39	39	39	39	39
32	62in.	34	34	36	36	36	36	36	39	39	39	39	39	39	39	39	39
33	64in.	34	34	36	36	36	36	36	39	39	39	39	39	39	39	39	39
34	66in.	34	34	36	36	36	36	36	39	39	39	39	39	39	39	39	39
35	68in.	34	34	36	36	36	36	36	39	39	39	39	39	39	39	39	39
36	70in.	34	34	36	36	36	36	36	39	39	39	39	39	39	39	39	39
37	72in.	34	34	36	36	36	36	36	39	39	39	39	39	39	39	39	39
38	74in.	34	34	36	36	36	36	36	39	39	39	39	39	39	39	39	39
39	76in.	34	34	36	36	36	36	36	39	39	39	39	39	39	39	39	39
40	78in.	34	34	36	36	36	36	36	39	39	39	39	39	39	39	39	39

In flat rolled sheets the above prices refer to lengths between 2 and 3 feet. Prices furnished by the manufacturers for wider and narrower sheet. All columns except the first refer to flat rolled sheet. Prices are 100 lbs. or more at one time. Less quantities 5c. lb. extra. Charges made for boxing.

## PRICE LIST SEAMLESS ALUMINUM TUBING.

STUBS' GAUGE THE STANDARD. SIZES CARRIED IN STOCK.  
Outside Diameters. BASE PRICE, 25 Cents per Pound.

Stubbs' Gauge.	1/4 in.	5/16 in.	3/8 in.	1/2 in.	5/8 in.	3/4 in.	7/8 in.	1 in.	1 1/4 in.	1 1/2 in.	1 3/4 in.	2 in.	2 1/2 in.	3 in.	3 1/2 in.	4 in.	4 1/2 in.
11	120	..	..	..	..	..	..	..	27	24	..	14	20	10	9	16	23
12	100	..	..	..	..	..	..	..	26	..	..	15	..	..	..	..	..
14	083	..	..	..	..	..	..	..	..	..	..	17	..	..	..	..	..
16	065	..	..	..	..	..	..	..	28	27	24	23	21	21	21	27	31
18	049	..	..	..	..	..	..	..	33	30	29	28	26	26	26	..	..
20	035	117	..	46	39	34	33	32	30	29	30	30	30	31	38	40	58
21	032	..	..	..	..	..	..	..	40	..	..	..	..	..	..	..	..
22	028	158	98	48	42	38	37	35	34	..	..	45	..	..	..	..	..
24	022	188	133	108	88	79	73	62	60	66	..	..	..	..	..	..	..

Prices are for ten or more pounds at one time. For prices on sizes not carried in stock send for Manufacturers' List.

## PRICE LIST FOR ALUMINUM ROD AND WIRE.

Diameter.	000 to No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.
B. & S. G'ge.	No. 10.	11.	12.	13.	14.	15.	16.	17.	18.	19.	20.	21.	22.	23.	24.	25.	26.
Price, per lb.	32	32½	32½	33	33½	34	34½	35	36	37	38	43	46	..	..	..	..

200 lbs. to 30,000 lbs., 3 cents off list; 30,000 lbs. and over, 4 cents off list.

## PRICE LIST FOR GERMAN SILVER IN SHEETS AND ROLLS.

Per cent.	Price per lb.	Per cent.	Price per lb.
12	\$0.52	16	\$0.58
13	.53	17	.59
14	.54	18	.60
15	.55	..	..

These prices are for sheets and rolls over 2 inches in width, to and including 8 inches in width and to No. 20, inclusive. American or Brown & Sharpe's Gauge. Prices are for 100 lbs. or more of one size and gauge in one order. Discount 50%.

## GERMAN SILVER TUBING.

4 per cent. to No. 19, B. & S. Gauge, inclusive	\$0.60
6 " " " " " "	.70
9 " " " " " "	.85
12 " " " " " "	1.00
15 " " " " " "	1.15
18 " " " " " "	1.20
21 " " " " " "	1.30

German Silver Tubing thinner than No. 19 B. & S. Gauge add same advances as for Braze Brass Tube.  
For cutting to special lengths add same advances as for Braze Brass Tube. Discount 40%.

## PRICE OF SHEET SILVER.

Rolled sterling silver .925 fine is sold according to gauge quantity and market conditions. No fixed quotations can be given, as prices range from 2c. below to 6c. above the price of bullion.  
Rolled silver anodes .999 fine are quoted at 2c. to 3½c. above the price of bullion.



# **THE UNITED STATES ALUMINUM COMPANY**

**PITTSBURGH, PA.**

# **ALUMINUM**

**SHEET TUBING**

**EXTRUDED SHAPES**

**ROD RIVETS WIRE**

**ELECTRICAL CONDUCTORS**

---

## **Branch Offices**

**NEW YORK—99 John St.**

**PHILADELPHIA—320 Witherspoon Bldg.**

**BOSTON—131 State St.**

**ROCHESTER—406 Powers Block**

**CHICAGO—Old Colony Bldg.**

**CLEVELAND—719 Garfield Bldg.**

**PITTSBURGH—2344 Oliver Bldg. WASHINGTON—514 Nat. Met. Bk. Bldg.**

**DETROIT—1515 Ford Bldg.**

**HENDRICKS BROTHERS**

Manufacturers of

Sheet and Bar Copper  
COPPER FIREBOX PLATES  
and STAYBOLTS  
WIRE and BRAZIER'S RIVETS

IMPORTERS AND DEALERS IN

INGOT COPPER, BLOCK TIN,  
SPELTER, LEAD, ANTIMONY  
BISMUTH, NICKEL, Etc.

49 CHH Street, NEW YORK

Established 1802 Cable Address "Scovill"

**SCOVILL MFG. CO.****WATERBURY, CONN.**

THE LARGEST AND MOST FULLY EQUIPPED  
BRASS ROLLING MILLS AND METAL  
GOODS MANUFACTURING ESTAB-  
LISHMENT IN THE WORLD

Estimates for Specialties in Brass, German  
Silver and Alum num furnished on applica-  
tion. DEPOTS:

NEW YORK: BOSTON: CHICAGO:  
75 Spring St. 170 Summer St. 210 Lake St.

**WATERBURY BRASS CO.**

General Offices, Mills and Factories.  
**Waterbury, Conn.**

NEW YORK OFFICE, 99 JOHN STREET.  
Providence (R. I.) Store, 131 Dorrance St.

Shipments Upon Receipt of  
Order From Large Stock of  
**SEAMLESS DRAWN BRASS  
AND COPPER TUBING**

BRASS { SHEET  
ROD  
WIRE } COPPER { SHEET  
ROD  
WIRE }  
**GERMAN { SHEET  
ROD  
WIRE }**  
AT WATERBURY SILVER

Non-Corrosive

Finest Quality

**COPPER AND YELLOW**

(Muntz) Metal  
Naval Brass  
Naval Bronze  
Manganese Bronze  
Plates, Sheets, Bolts, Bars, Rods,  
Nails, Tacks, &c.

Taunton-New Bedford Copper Co.  
NEW BEDFORD, MASS.

11 Water St., New York 61 Battery March St., Boston

**C. G. HUSSEY & CO.**

PITTSBURGH, PENNA.

Manufacturers of

**COPPER**

In Sheets, Plates, Rolls

**ANODES**

Tacks and Nails

**Bridgeport Brass Co.**

BRIDGEPORT, CONN.

Postal Telegraph Building,  
Broadway and Murray St., New York  
17 N. 7th Street, Philadelphia

Manufacturers of

Brass and { Sheet, Tub-  
Copper { ing, Wire  
and Rods.

Metal Goods Made to Order from  
Sheet, Rod, Wire and Tubing

**BRASS and COPPER** in  
Sheets and Rolls

**SILVER PLATED METAL**  
(for Coach Lamps)

**BRITANNIA METAL**  
**B. & M. BABBITT METAL**  
for Bearings

**LINING METAL** for Auto-  
mobile Bearings and Copper  
for Electrical Purposes

**H. K. & F. S. BENSON**  
GLEN RIDGE, N. J.

**THE SEYMOUR MFG. CO.**

SEYMOUR, CONN.

**German Silver**

BRASS, COPPER and BRONZE  
IN SHEETS, WIRE, RODS  
and TUBES

**COPPER AND NICKEL  
ANODES**

Resistance Wires, Wire, Shot Copper

**THIS SPACE  
FOR SALE**

SEND FOR RATES

The Ansonia Brass and Copper Co.

99 JOHN ST., NEW YORK

MANUFACTURERS OF

**BRASS and COPPER Sheets, Tubes,  
Rods and Wire**

SOLE MANUFACTURERS TOBIN BRONZE  
(Trade-Mark Registered)

**PHENIX TUBE CO.**

Manufacturers of

Brass and Bronze Iron Lined Tubes  
Braze Steel Tubes,  
Round and Square.

Main Office and Mills: City Branch Offices:  
Brooklyn, N. Y. Chicago, San Francisco

**Baltimore Copper Smelt-  
ing and Rolling Company**  
BALTIMORE, MARYLAND

**SHEET COPPER**

**"RIVERSIDE"** German Silver  
Phosphor Bronze  
Sheets, Rods, Wire, Ingots, Castings,  
Jewelers' Bars and Alloys  
**The Riverside Metal Co.**  
Riverside, Burlington Co., N. J.

**THIS SPACE FOR SALE**

SEND FOR RATES





# D I R E C T O R Y



**METAL ROLLING MILLS.**  
INGOT, PLATE, SHEET, ROD, WIRE, TUBE, METAL GOODS.

**A. H. Wells & Co.**  
WATERBURY, CONN.  
MANUFACTURERS OF

SEAMLESS.....**TUBING**  
NICKEL SILVER,  
BRASS, COPPER,  
BRONZE AND  
PURE COPPER  
TUBING FOR ELECTRICAL PURPOSES

Odd and Special Shapes, and Small  
Tubing, a Specialty

— ALSO THE —  
**Bourdon Steam Gauge Springs**  
All sizes from 8 to 36, B. & S. Gauge.

**Wm. F. Renziehausen Co.**

Rollers of Silver Anodes  
and Sterling Silver

ALSO DEALERS IN  
FINE GOLD AND SILVER

**43-47 Oliver St., Newark, N.J.**  
Long Distance Phone 3759 R.

**LINTON & CO.**  
95 PINE STREET PROVIDENCE, R. I.  
MANUFACTURERS OF

SEAMLESS **TUBING**  
BRASS ..  
In Small Sizes

GOLD SOLDER, sheet or wire.  
SILVER SOLDER, sheet or wire.

**SHEET BRASS SOLDER**

**THIS SPACE  
FOR  
SALE**

—

**SEND FOR RATES**

**THE PILLING BRASS CO.**  
WATERBURY, - - CONN.  
Manufacturers of

**Rolled Brass, Bronze, Ger-  
man Silver and Copper in  
Thin Gauges, Platers' Metal**

Established 1859. Telephone connection.

**JOHN TOOTHILL**  
BRITANNIA METAL. ANTIMONIAL LEAD.  
SHEET BLOCK TIN  
CASTING, ROLLING AND REFINING.  
66 Pitt Street, New York City  
ROCHELLE PARK, N. J.

**SEAMLESS STEEL TUBING**  
From 4 in. Diameter to 1-64 in.  
Finished Bright, Smooth and Accurate to  
1-1000 in. Inside and Out  
Tool Steel Tubing. Soft Steel Tubing. Also  
Small Brass, Copper and Aluminum Tubing.  
**ELLWOOD IVINS TUBE WORKS**  
Oak Lane Station, Philadelphia, Pa.

**ROLLED FIRELESS STERLING SILVER**  
SILVER SOLDERS, ANODE  
SILVER and SILVER WIRE

For further information address  
**JOHN J. JACKSON CO.**  
91 Mechanic St. NEWARK, N. J.

**Britannia Metal** CASTING, ROLLING  
and REFINING  
FOR THE TRADE.

**STANDARD ROLLING MILLS**  
363 HUDSON AVENUE, BROOKLYN, N. Y.



# D I R E C T O R Y



**MANUFACTURERS OF PLATED SHEET METALS  
SHEET METAL AND WIRE GOODS**

**THIS SPACE FOR SALE**

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**SEND FOR RATES**

**NATIONAL SHEET METAL CO.**  
Manufacturers of

**PLATED SHEET METALS**  
FANCY ROLLED METALS  
Nickelzinc, Brasszinc, Copperzinc, Bronzozinc, Nickeltin, Brasstin, Copper-  
tin, Bronzetin Sheet Zinc, polished and unpolished, for stamping.  
Large Saving to Manufacturers Last Year's Sales 1,000,000 lbs.  
For Further Information Address Office: PERU, ILLINOIS

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—

**SEND FOR RATES**



**BUCKLE TONGUES**  
made from any metal desired.  
English style. The finest made.  
**THE CAMPBELL-WARNER CO., Middletown, Conn.**

SEE PAGE 42 FOR WANT ADVERTISEMENTS



**Matthiessen & Hegeler  
Zinc Co.**

LA SALLE, ILLINOIS

**Smelters of Spelter**  
and Manufacturers of  
**Sheet Zinc and Sulphuric Acid**

Zincs for Leclanche Battery

Special Sizes of Zinc to order. Rolled Battery Plates. Selected Plates for Etchers' and Lithographers' use. Selected Sheets for Paper and Card Makers' use. Stove and Washboard Blanks.

**Horsehead Spelter**

The Original Brand of Pure Spelter

Indispensable in the manufacture of

Cartridge Metal, German Silver,  
Fine Spun Work, Fine Cast-  
ings, Superior Alloys, &c.

**THE NEW JERSEY ZINC CO.**

National City Bank Bldg.

55 Wall Street, New York

**ILLINOIS ZINC  
COMPANY**

Manufacturers of

**Spelter, Sheet Zinc, and  
Sulphuric Acid**

PERU, ILL.

W. FISHER, Agent, 81 and 83 Fulton St.,  
New York City

Telephone, 139 Beekman

**High Grade Spelter**

**GOLDEN ROD BRAND**

Suitable for High Grade Brass Work,  
Cartridge Metal, Etc.

ALUMINUM ALLOYS, ETC.

**Brazing Solder**

**H. M. Shimer & Co.**

19th Street and Washington Ave.  
PHILADELPHIA, PA.

**Sandoval Zinc Co.**

Manufacturers of

**HIGH GRADE  
SPELTER**

SUITABLE FOR ALL PURPOSES

General Offices:

120 N. Peoria Street, Chicago, Ills.

Works: Sandoval, Ills.

**Cold Rolled Zinc**

IN COILS FOR

**Drawing and Stamping**  
**THE PLATT BROS. & CO.**

WATERBURY, CT.

**THIS SPACE  
FOR SALE**

**High-Grade Spelter and  
Sulphuric Acid**

**HEGELER BROTHERS, DANVILLE, ILL.**

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FOR SALE**

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**Illinois Smelting & Refining Co.**

122 N. Peoria Street, Chicago, Ill. Cable Address "Smelref," Chicago

Manufacturers of

Pig and Bar Lead, Spelter, Babbitt Metals  
Linotype, Stereotype, Monotype and Electrotypes  
Metal, Yellow Composition and Phosphor Ingots

Dealers in New and Old Metals, and the Largest Buyers of Zinc  
Dross, Skimmings, Sal Skimmings, Scrap Zinc and Aluminum

**THE MORTON B. SMITH CO.**

241 and 243 Front St., New York

Offer for Sale:

**HEAVY COPPER AND WIRE**  
Ready for the Crucible

**COMPOSITION**  
Carefully Selected

**HEAVY YELLOW BRASS**  
Free from Iron

**OLD METALS GENERALLY**

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# D I R E C T O R Y

**METAL SMELTERS, REFINERS, DEALERS.**  
**BUYERS AND SELLERS OF NEW AND OLD METALS.**



**THEODORE MCILLER  
& CO.  
BUFFALO, N. Y.**

*Our Specialties*  
 Heavy Copper and  
 Copper Wire Cut in  
 Crucible Shape.  
 Number One Red  
 Brass Scrap.  
 Heavy Yellow Brass  
 Scrap.

**The CRESCENT  
Phosphorized Metal Co.**

PHILADELPHIA, PA.

Manufacturers of High Grade PHOSPHOR TIN, PHOS-  
 PHOR BRONZE, PHOSPHOR COPPER, Containing  
 up to 15% Phosphorus. MANGANESE COPPER.  
 Also Dealers in PHOSPHORUS. Lowest Market Prices.

**Eagle Smelting & Refining Works**

734-740 EAST 14th STREET, NEW YORK CITY

Manufacturers of  
 Solder, Type Metals, Babbitt Metals  
 and White Metal Alloys

Smelters of Drosses of All Kinds

Dealers in New and Old Metals

**Pittsburg Smelting & Refining Co.**

Dealers in

Brass Foundry Tailings, Emery Grindings, Magnetic  
 Separator Tailings, Copper Scales, Brass Skimmings,  
 Zinc Oxide, Sal Ammoniac Skimmings, Etc.

Send us Samples of what you have to Sell

P. O. Box 203

Greensburg, Pa.



**Shonberg's S Bearing Metal**

M. M. GRADE

Has the best wearing qualities, with the strength and tenacity of  
 phosphor bronze. We claim SUPERIORITY for our "M. M. GRADE"  
 over all other Bearing Metals on the market. We want you to con-  
 vince yourself by testing and will be pleased to send a sample on  
 request. Send for New Catalog "S."

I. SHONBERG, 363 Hudson Ave., BROOKLYN, N.Y.

**SMELTERS OF**

Skimmings  
 Grindings  
 Buffings  
 Sweepings

**BRASS**

Skimmings  
 Grindings  
 Buffings  
 Sweepings

**WHITE & BRO., Inc.**

Station K, Philadelphia, Pa.

**ALBERT A. MOERS**

24 Stone Street

New York

FOR SALE

Aluminum, Antimony, Antimonial Lead, Tin, Cadmium

WANTED

Zinc Dross, Zinc Ashes, Flux Skimmings

**MAGNESIUM METAL**

Improves the Strength of

Copper, Brass, Bronze, Aluminum,  
 Nickel, Zinc Mixtures

NOTE: Always Specify "LEAVITT'S" BRAND

**C. W. LEAVITT & CO.**

1810 CORTLANDT BLDG.

NEW YORK

**S. BIRKENSTEIN & SONS**

379-407 W. ONTARIO STREET, CHICAGO, ILL.

**PIG ALUMINUM AND ALLOYS**

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# D I R E C T O R Y



**METAL SMELTERS, REFINERS, DEALERS**  
**BUYERS AND SELLERS OF NEW AND OLD METALS.**

TELEPHONE, BRIDGE 1519.

LOCK BOX 163.

**SANDOVAL ZINC CO.**

Chemical Department

**EAST ST. LOUIS, ILLS.**

Manufacturers of Soldering Flux, Commercial Salts, and Chloride of Zinc in Fused, Granulated and Liquid form.

The Granulated Chloride of Zinc is indispensable, as a flux, to Brass, Copper and Aluminum Founders.

Put up in 50 and 100 lbs. iron packages.

Price 10 cents per pound delivered in the United States.

**Wm. F. Renziehausen Co.****GOLD AND SILVER REFINERS****SWEEP SMELTERS, ASSAYERS AND ANALYTICAL CHEMISTS**

Full value paid for any material containing Gold, Silver and Platinum

**43-47 Oliver St., NEWARK, N. J.****LONG DISTANCE PHONE, 3759-R****M. M. ANDLER & CO.****BOSTON, MASS.**Dealers  
in**METALS**

Consumers of Skimmings, Grindings, Drosses, Filings and all kinds of Scrap Metals. Also Brass Foundry Ashes.

**METALLIC PHOSPHORO**

(Phosphor Tin Improved)

Prevents the formation of Pores, Blow-holes or Cold-shuts in Castings.

Also prevents excessive shrinkage.

**THE NEW ERA MANUFACTURING CO.****KALAMAZOO, MICH.****BRASS INGOT****WHIPPLE & CHOATE, BRIDGEPORT, CONN.**For Advertisement of  
**U. S. REDUCTION CO.**

See Page 55

**THIS SPACE FOR SALE****SEND FOR RATES****THIS SPACE FOR SALE****SEND FOR RATES**


# D I R E C T O R Y



**METAL FOUNDERS, FINISHERS AND SHEET METAL WORKERS.**

**THE LIGHT MANUFACTURING & FOUNDRY COMPANY****POTTSTOWN, PA.**

ARE THE ORIGINAL AND ONLY MANUFACTURERS OF

**AUTOMOBILE BRAND AERIAL BRAND**  
**ALUMINUM CASTINGS**

Our Aluminum Castings are especially adapted to Automobile, Auto Boat and Aerial Construction.

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## ALUMINUM GOODS MFG. Co.

Fancy Goods  
Combs  
Boxes  
Screw Caps  
Spinning  
Signs  
Advertising  
Novelties  
Printing  
Numbers  
and Letters  
Cooking Utensils  
Hardware Lines  
Models

BRANCH OFFICES  
AND SALESROOMS  
New York Chicago

HOME OFFICE  
NEWARK, N. J.

FACTORIES  
Newark, N. J. Two Rivers, Wis.  
Manitowoc, Wis.

### EVERYTHING IN ALUMINUM

SPECIAL GOODS made to order.  
Correspondence Solicited.

### CASTINGS



### CASTINGS

BRASS, BRONZE, ALUMINUM  
PHOSPHOR BRONZE  
MANGANESE BRONZE

Large castings a specialty, 1000 to 3000 lbs. and up

**CLUM & ATKINSON**

571 Lyell Avenue :: :: ROCHESTER, N. Y.

### THE BUCKEYE ALUMINUM CO.

DOYLESTOWN, OHIO

MANUFACTURERS

COOKING  
UTENSILS

SPECIALTIES  
CASTINGS

## THE METAL INDUSTRY DIRECTORIES

are a Ready Reference for Buyers and Sellers. They are classified cards better than the street signs of a business.

In no way can you get such good Trade Publicity at so slight a cost.

RATES FURNISHED FOR THE ASKING

THE METAL INDUSTRY, 99 John Street, NEW YORK

SEE PAGE 42 FOR WANT ADVERTISEMENTS



## ETCHED NAME PLATES



Let us quote you for your etched plates.  
We have the most modern plant. Best work. Lowest prices.

SCALES, DIALS, ETC.

Engraved Signs, General En-  
graving, Stamping and  
Saw-piercing

Have your sign repaired. We replate and re-enamel equal  
to new.

Electro-gold, silver, copper and nickel plating.

**KRIZAN & HILL, Manufacturers, 521-523 East 72nd Street, New York City**

## ETCHING OF METALS

I have had 37 YEARS of practical experience in etching knives, razors, scissors, hammers, axes, revolvers, clock dials, sign plates, door plates.

For a liberal compensation I will teach my process to manufacturers and fit up plants.

I make a specialty of etching plates in steel, copper, brass and zinc for transferring and embossing. Also silverware, including such articles as mirror, brush and comb backs, book and album covers, trays, souvenir spoons and similar articles.

**MAX SCHWEIZER**

**230 North Ave.,**

(P. O. Box 943)

**BRIDGEPORT, CONN., U. S. A.**

NO JOB TOO LARGE OR TOO SMALL FOR US

**NORTHERN OHIO MANUFACTUR-  
ING AND REFINISHING WORKS**

B. HENGST, Prop.

GOLD, SILVER BRONZE AND  
NICKEL PLATING BRASS

**SAFETY RAZORS A SPECIALTY**

Repairing of all Kinds of Metal Goods, also Lamps and Chandeliers

2069 E. 4th Street,

CLEVELAND, OHIO

**BLUE RIDGE METAL  
MANUFACTURING COMPANY**

SUSQUEHANNA, PA.

Sheet metal goods of every description.  
Special tools and dies. Polishing and plating.  
Unusual facilities for making low estimates.

SEND SAMPLES

**ELMIRA MACHINE WORKS  
UNION, N. Y.**

**ELECTRO PLATING**

IN QUANTITY

Makers of Specialties in Wood and Metal on Contract

**THIS SPACE FOR SALE**

SEND FOR RATES

SEE PAGE 42 FOR WANT ADVERTISEMENTS.



# WIRE-FORMING

such as illustrated by the forms shown below, is the kind of work that this machine was designed particularly to do.

## BAIRD AUTOMATIC FOUR-SLIDE WIRE-FORMING MACHINES

have been greatly improved and several new and novel features introduced to produce a more speedy and more efficient machine.

### CAN WE NOT INTEREST YOU?

Made in 6 sizes. No. 0 to 5, and working wire up to  $\frac{3}{8}$ " dia. x 15' long.

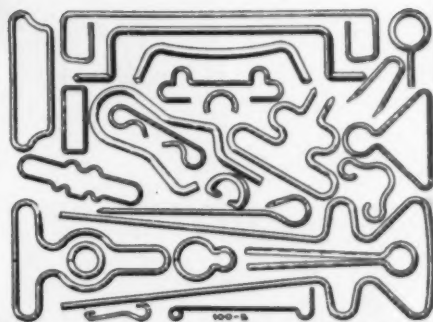
ASK FOR BULLETIN 100

**The Baird Machine Co.**  
Oakville, Conn., U. S. A.

Telegrams: BAIRDMACHN, WATERBURY  
Western Union Code.



PATENTS APPLIED FOR



This Machine will *Dry Out* metal goods after plating, dipping, pickling, etc., without the use of sawdust.

**DRIES IN  
A FEW  
MINUTES**

**X**

Very easily operated, and hoist takes out work.



This size has a capacity of 24 quarts.

Also made in a smaller size for manufacturing jewelers, and jobbing plating use, with a capacity of 11 quarts.

**The CURTIS DRYER COMPANY**

93 & 95 Foster Street - Worcester, Mass.

## Lofgren & Armstrong

Designers and Builders of

**Special and Automatic Machinery  
Punches and Dies. Sub-Press Dies  
and Fine Tools**

Sheet Metal Stamping by Contract and Metal Novelties

Builders of Screw Presses Prices on Application  
Estimates Cheerfully Submitted

803 LOCUST ST., PHILADELPHIA, PA.

There may be some of your manufacturing problems that can be solved by the use of an OLIVER Quality Rolling Mill.



THE above cuts show full-sized cross sections of the original hexagon tubing and the special shape produced by rolling the hexagon through one of our rolling mills with special forming rolls. May we try to solve your problem? You can have the benefit of our twenty-five years' experience.

**The W. W. Oliver Mfg. Co.**

1499 Niagara Street, Buffalo, N. Y.

## No. 9 POLISHING AND BUFFING LATHE



It meets demand for a lathe free from vibration and built for work. It is *heavy, rigid and substantial*.

Made in our own shop with first-class workmanship and best materials.

### DIMENSIONS

Size of base, 25 x 29 in.  
Length of bearings, 9 1/4 in.  
Height from base to center of spindle, 38 in.  
Diameter of spindle between flanges, 1 3/4 in.  
Diameter of spindle in boxes, 1 5/8 in.  
Length of spindle, 55 in.  
Size of pulleys, 5 in. diam., 6-in. face.  
Crucible steel shafting.  
Weight of lathe, 550 lbs.

WRITE FOR FURTHER INFORMATION

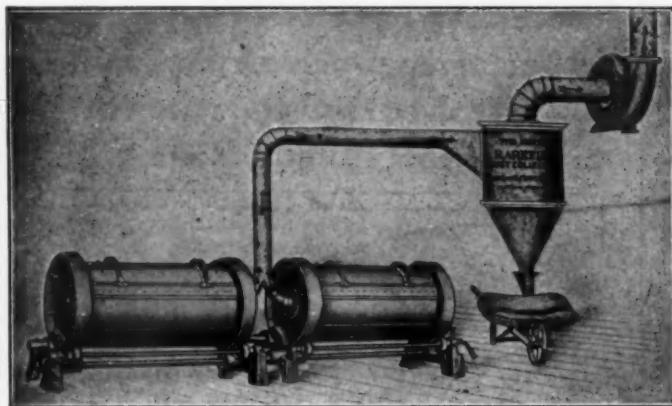
**Chas. F. L'Hommedieu & Sons Co.**

*Manufacturers*

RELIANCE PLATING BARRELS  
RELIANCE POLISHING WHEELS

COMPLETE PLATING PLANTS INSTALLED

**24-30 South Clinton Street  
CHICAGO, ILL.**



NO CLOTH : : NO MOVING PARTS  
NO CUTTING OUT OF FANS

The **Morse Rarefied**  
**DUST COLLECTOR**

—FOR—

Sand Blast, Tumbling Mills, Emery Wheels

*Shipment on 60 days' trial to any part of the United States*

MAN'F'D EXCLUSIVELY BY

**THE KNICKERBOCKER COMPANY**  
JACKSON, MICHIGAN

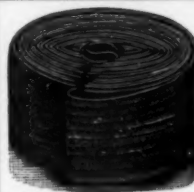
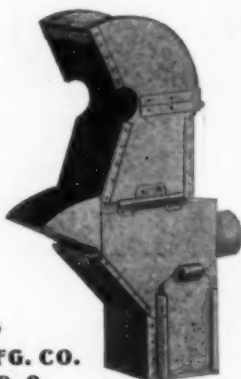
Polishing and Buffing  
Wheels require

**HOODS**

to concentrate the  
Dust into the Dust  
Collecting System.

This is one of our Vacuum  
type; we have others to meet  
all conditions.

Write for Particulars  
**CLEVELAND BLOW PIPE & MFG. CO.**  
2096 W. 3rd. ST., CLEVELAND, O.



**AMES SWORD COMPANY**  
CHICOPEE, MASS.

Manufacturers of  
**ENDLESS SEWED POLISHING BELTS**

*Correspondence Solicited Discounts Quoted*

**MILLER & CO.**

12-14 William St., **NEWARK, N. J.**

Importers and Manufacturers of

**Platers' and Polishers' Supplies**  
**HIGH-CLASS POLISHING WHEELS**

For Grinding, Buffing and Polishing  
Makers of the Celebrated "WALRINE" Leather Wheel.